2019 ANNUAL REPORT

# amyris

**To our Shareholders:**

Amyris is quickly adapting its business to serve the needs of our partners and consumers throughout the world to protect the health and safety of everyone.

We are learning how resilient our business model and core capabilities are even during this time of uncertainty and change facing our world. Synthetic Biology – and in particular, our ability to design and engineer yeast (or other organisms) to make the chemistry that is most needed and the ability to do this faster, cheaper and better than traditional alternatives – is playing a critical role toward scaling therapies or a vaccine to address the current COVID-19 or other global pandemics. We are in action to do our part to address this crisis and deliver impact at a time of great need. We are doing this while making the safety of our people and all of our partners our number one priority.

We are recognized for having built a leading Synthetic Biology platform in the world and have discussed applying our platform with multiple agencies to help advance testing, treatments and other solutions for the COVID-19 pandemic. We have offered our expertise in high throughput screening to help develop a high throughput method for COVID-19 testing that could significantly increase the speed and availability of testing. We are also advancing tests of several current molecules in our portfolio to assess their performance as potential therapies for COVID-19.

Our plant-based squalene has shown early results that it performs as well as shark squalene as a vaccine adjuvant. We can make this adjuvant in significant quantities and at much lower cost compared to shark-based squalene. This is one of the best adjuvants that is available today to enhance the delivery and improve the efficacy of flu vaccines and we are currently working with the Infectious Disease Research Institute (IDRI) and anticipate being able to scale production of this adjuvant in significant quantities. We believe vaccines will be the long-term solution against COVID-19, and when combined with the deepest dataset and knowledge base of Synthetic Biology, Amyris is well-positioned to play a critical role in addressing the current health crisis. This is one of the most exciting times to be in Synthetic Biology and we are excited to realize our full potential in response to the world's needs.

We believe vaccines will be the long-term solution against COVID-19, and so will antibodies that work against the virus. Production of novel antibodies is an extremely time consuming and labor-intensive process. There has been very little innovation in this field and the industry standard is to use decades old technology using Chinese Hamster Ovary (CHO) cells. A few years back, Amyris had explored using more standard organisms like yeast for accelerated and cheaper production of antibodies and we had good preliminary results from our development work. We are in process of accelerating the development of our platform as a rapid production system for novel antibodies and believe this can play a vital role in the ability of the pharmaceutical industry to deliver a vaccine that can meet the needs of the global population. These are a few of the examples of how our investment in high throughput screening, the industrial application of our proprietary designer nuclease technology, and the intensive use of robotics and Artificial Intelligence, combined with the deepest dataset and knowledge base of Synthetic Biology is well positioned to play a critical role in addressing this and the future health crisis facing our world. This is one of the most exciting times to be in the Health Sciences sector and it's the moment for Synthetic Biology to realize its potential.

In addition to our technology platform, we are also very fortunate to have the deepest industrial product portfolio of molecules from sugar cane. This portfolio is further advantaged by our ability to move from molecules into commercial scale and volume production at significantly lower costs compared to other alternatives. This deep product portfolio has enabled us, in less than two weeks, to conceptualize, execute and scale a newly formulated Pipette™-branded hand sanitizer to help fight COVID-19. The combination of science, supply chain agility, Pipette brand recognition, and Amyris's promise of No Compromise® products was at the heart of this accelerated process. We are experiencing incredible demand for this product. Initial consumer response and ratings indicate this to be a category leader in terms of efficacy and performance and how it leaves your hands feeling. We donated product to front-line health care workers in hospitals on both the East and West coasts, as well as to corporations involved with manufacturing equipment to help battle the virus. The product is formulated with plant-derived squalane and offers great skincare properties at a time when skin health and cleanliness are a top priority for society. In addition to the direct success of revenue for this product, the additional consumer website traffic has doubled the revenue of our other Pipette products. Clean Beauty is on track to providing more than half of our total revenue this year as a result of our ability to

understand this critical market need for clean products that perform and our success in meeting it. We believe hand sanitizer will become a part of our everyday life and we have an opportunity to become the leading choice for consumers.

The resilience of our business model is proving differentiated and delivering immediate business results for our shareholders. About 2/3 of our ingredient supply is used by the leading brands and products for personal care and household cleaning. Amyris ingredients serve as the non-commodity component of many of these products to enhance the performance, provide unique characteristics and in many cases serve as an anti-inflammatory ingredient. These products are experiencing significant demand.

Our consumer brands and the intimacy we've created with our consumers through a digital first and mobile strategy are delivering the best performance in our history. Our on-line business has increased over 500% during the first half of April 2020 and has already delivered much more on-line sales than any other month in our history. Based on that trend, we are on a trajectory to experience well over 1 million consumer visits a month to our on-line brands – this compares to about 160,000 visitors as of April of 2019. We are extremely thankful to our retail partners at Amazon, Target, Wal-Mart and Sephora who are working tirelessly and safely to keep consumers connected and receiving essential products to keep themselves healthy during this time.

This is an unprecedented time for the world as a result of the health crisis caused by COVID-19 and the resulting economic impact. We are prioritizing our people, their health and safety, and that of their families. We have instituted a special task force to ensure that proactive measures were taken across our facilities to implement various alternative employee work scenarios while ensuring appropriate business continuity.

**Purpose in Everything We Do**

We have a clear purpose-driven culture at Amyris with the No Compromise promise at the heart of everything we do. Every day, our priorities and decisions are driven by our purpose to create clean, sustainably-sourced, plant-derived natural ingredients and consumer products that are good for people, the planet and business.

We believe that the companies that most impact our lives are built by collaborators and enabled by leading innovation. The combination of our leading science and technology platform, strategic partnerships, and consumer insights is how we deliver growth across our Clean Beauty, Health & Wellness, and Flavors & Fragrances portfolio, which includes our wholly-owned brands and delivery of specialty ingredients to the world's leading brands.

We put people, and their health and safety, first in all that we do and embrace diversity and inclusion throughout our organization. We have made good progress with our safety performance in recent years and recorded less than a handful of recordable injuries in 2019. We will not be satisfied until we reach zero injuries across our operations.

**The Year in Review**

2019 was a year of very good progress for Amyris as we continued to apply our science and technology as the engine to grow our strategic partnerships and consumer brands. The foundation of this growth was our commitment to make good for people, the planet and our shareholders.

2019 was a record sales year for Amyris, during which we significantly expanded our direct-to-consumer brands as well as our ingredients business. In 2019, we successfully completed our exit from selling commodity products. Growth from our consumer and Clean Beauty businesses represented twice the results from our other business activities and positioned us to become the industry leader in both ingredient supply and Clean Beauty consumer product sales.

We established market leadership in the Health and Wellness and Clean Beauty sectors, and our "Clean Academy" education platform has become the leader for setting consumer standards in Clean Beauty. We have established leadership in helping consumers transition from the general beauty sector to Clean Beauty. We have differentiated our business with the combination of Synthetic Biology and clean fermentation as the only approach to making natural ingredients and products sustainable. We believe consumers more than ever want clean, safe ingredients and we have a leading technology to deliver on these growing consumer needs.

We are entering 2020 with a clear path to leading growth in our chosen end-markets. Our teams remain laser-focused on executing our growth strategy. Our ability to meet consumer megatrends is underpinned by a robust supply chain capability. The combination of these capabilities to meet consumer demand with our winning products has significantly contributed to the expansion of our gross margin through last year and has set us up to achieve our best year yet in 2020.

**2019 Highlights**

On a full year basis, total company revenue of approximately $153 million set a new historical record and was up 140% versus the prior year. We achieved strong growth across each of: Product (+78%), Licenses and Royalties (+606%), and Collaboration and Grants (+73%).

Gross profits were 56% of sales, which was in line with the prior year.

As it relates to our product volume, we demonstrated very strong growth in each of our chosen end-markets.

We grew production output across our ingredients portfolio by 90%, consistent with the growth we witnessed in sales revenue. A key part of that growth is related to our squalane product, the world's leading emollient, which underpins the momentum within our Clean Beauty brand, Biossance™, and growing squalane ingredient sales to other brands. Over 3,000 of the leading personal care and beauty brands globally contain our sugar cane, plant-based squalane as a source of natural hydration to keep the skin clear and healthy. Brands are determining that our plant-derived squalane provides the highest purity at the best value and improves the efficacy in their formulations. At a time where healthy skin is the number one priority for the beauty consumer, we will continue to lead this product transformation to clean products.

In Clean Beauty, we saw tremendous growth in Biossance, our skincare consumer brand, resulting in more than a doubling in revenue. This growth reflected both increased brand recognition in North America as well as international geographical expansion. We market Biossance through our partnership with Sephora, both in-store and online, and we also sell via our own ecommerce platform (Biossance.com).

During the latter part of 2019, we innovated in the baby care market with the launch of our Pipette brand. We positioned Pipette as a new standard in clean baby and pregnancy-safe body care using the fewest possible ingredients from the purest sources. The product line-up includes shampoo & wash, lotion, oil, wipes and balm for baby, and belly butter and oil for expecting and postpartum moms and is available via various online channels and in-store from buybuy BABY®. Pipette has started out with strong sales through buybuy BABY, Walmart.com, Target.com, Amazon and our Pipettebaby.com website. Pipette is performing at double the sales rate Biossance performed at during its first year, and we expect this to be another strong Amyris brand delivering a clean product offering that makes consumers and the planet happy. Our latest addition to the Pipette product line includes an innovative hand sanitizer product.

Our Sweetener portfolio saw significant growth both with our RebM (business-to-business) and Purecane™ (consumer) products. We are seeing great progress with our RebM product in Latin America with 96% of the sampled prospects deciding to formulate or start purchasing our product. For Purecane, we experienced strong interest after the introduction in the fourth quarter of 2019. The Purecane portfolio includes tabletop sachets and a baking product, which is gaining very strong traction in 2020.

Within our ingredients business, Flavors & Fragrances had a strong year in 2019 with sales up in excess of 50%. Our ingredients are formulated into fine fragrance consumer products as well as home and personal care products, and we have longstanding partnerships with the world's leading flavor and fragrance companies.

**The Road Ahead**

In 2020, we are focused on growing profitably (on a gross margin basis) and continue to execute against the following strategic priorities:

- Capitalize on the investments we made in our high-growth consumer brands to more than double sales revenue year-over-year. Continue to build on our Clean Beauty and natural sweetener product market leadership.

- Execute on our R&D collaboration programs to deliver scientific and commercial value to our strategic partners while continuing to significantly expand our product pipeline.

- Continue our supply chain optimization program and effectively manage our capital investments in lower cost manufacturing capability to significantly expand our product gross margin.
- Deliver on our path to sustained cash generation from operational performance.

We are capitalizing on the momentum of our Clean Beauty consumer brands and will continue to extend the reach of our No Compromise products. With Biossance, we project continued strong growth in 2020 from a combination of product launches, Sephora store expansion, digital marketing, our Clean Academy education platform, and global growth. Our Pipette brand has entered its first full year and we expect significant growth as the year progresses, further enhanced by the recent launch of the hand sanitizer product.

We project 2020 to be a step-out year for Purecane with greater brand visibility as consumers seek a healthy and natural alternative to sugar and other sweetener products that have a bitter after-taste.

Our ingredients for fine fragrances, home and personal care products is expected to see strong growth in the current COVID-19 environment in which people clean more frequently with household and personal care products.

**Thank You**

We are excited about the opportunities that lie ahead for our business, our shareholders, our partners and our employees. We are very encouraged by our strong start in 2020 and the new opportunity to bring to market and rapidly accelerate sales of our hand sanitizer to help keep people safe in the current COVID-19 crisis. We are deeply committed to realizing the full potential of the world's leading Synthetic Biology platform to deliver fast and scalable solutions for a vaccine adjuvant and potential therapies against COVID-19 and future pandemics. In addition to contributing to a new breakthrough by leveraging our technology, our existing product portfolio supplies key, specialty ingredients to many of the world's leading brands for personal care and cleaning products.

Our focus and commitment to delivering No Compromise, clean products has earned us a leadership position in Clean Beauty at a time where beauty is all about staying healthy. We believe this is more than a trend and represents a better way to live. Our focus on a digital, mobile first approach to consumers, with a strong foundation in education, has enabled us to grow our business significantly during the current health crisis. It is our way to give back to the consumers we love. We want to be there for them at their time of need with products that are clean and help them stay healthy.

Our current performance has the potential to accelerate our cash flow goals. The strong support of our long-term shareholders has enabled us to invest and deliver strong results through this challenging period. This is our moment to serve consumers and our partners and to deliver on our promise of a healthier planet. We will continue to strengthen our business by leveraging our current growth momentum.

I would like to thank our customers for their continued partnership, our shareholders for their ongoing support and all our employees for their loyalty and commitment to realizing the full potential of Amyris. I look forward to sharing our accomplishments with you through this year ahead and wish everyone continued safety and good health.

Sincerely,

John G. Melo
President and Chief Executive Officer

**FORWARD-LOOKING STATEMENTS**

This annual report contains forward-looking statements reflecting our current expectations that involve risks and uncertainties. These forward-looking statements include, but are not limited to, statements concerning our business growth and profitability, revenue and gross margin performance and growth, including growth of our ingredients and branded products' portfolio, reduction in operating expenses, expected results of operations, scaling and commercialization of our product pipeline and introduction of new products, including the cost, quality and scalability of such products, our competitive advantage, consumer demand and preferences, efficacy of molecules as vaccine adjuvants, potential utilization of fermentation-based molecules to use as treatment against COVID-19, and our platform to develop a method for COVID-19 testing, and similar matters. The words "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. These forward-looking statements involve risks and uncertainties that could cause our actual results to differ materially from those anticipated or implied in the forward-looking statements, including, without limitation, the risks set forth in Part 1, Item 1A, "Risk Factors" of our enclosed Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and in our other filings with the Securities and Exchange Commission. We do not assume any obligation to update any forward-looking statements, except as required by law.

Dear Amyris stockholder:

You are cordially invited to attend our 2020 Annual Meeting of Stockholders to be held on Friday, May 29, 2020 at 2:00 p.m. Pacific Time at our headquarters located at 5885 Hollis Street, Suite 100, Emeryville, California 94608. You can find directions to our headquarters on our company website at https://amyris.com/contact-us/.

We are actively monitoring the public health and travel concerns of our shareholders and employees in light of COVID-19, as well as the related protocols that local and national governments may impose. As part of our precautions, we are considering the possibility of holding the 2020 Annual Meeting of Stockholders solely by means of remote communication (on the above date and time, via live audio webcast). We will publicly announce any alternative arrangements for the 2020 Annual Meeting of Stockholders as promptly as practicable in a press release available on our website.

The accompanying Notice of Annual Meeting of Stockholders and Proxy Statement describe the matters to be voted on at the meeting.

We are using the Internet as our primary means of furnishing proxy materials to our stockholders. As a result, most stockholders will not receive paper copies of our proxy materials. We will instead send most stockholders a notice with instructions for accessing the proxy materials and voting over the Internet. The notice also provides information on how stockholders can obtain paper copies of our proxy materials if they wish to do so.

Whether or not you plan to attend the annual meeting, please vote as soon as possible. You may vote over the Internet, by telephone, or, if you receive a paper proxy card or voter instructions form in the mail, by mailing a completed proxy card or voting instruction form. Voting by any of these methods will ensure that you are represented at the annual meeting.

On behalf of the Board of Directors, I want to thank you for your continued support of Amyris. We look forward to seeing you at the meeting.

John Melo
*President and Chief Executive Officer*

Emeryville, California
April 17, 2020

**YOUR VOTE IS IMPORTANT**

You are cordially invited to attend the meeting in person. Whether or not you expect to attend the meeting, please vote as soon as possible in order to ensure your representation at the meeting. You may submit your proxy and voting instructions over the Internet, by telephone, or, if you receive a paper proxy card or voter instructions form in the mail, by completing, signing, dating and returning the accompanying proxy card or voting instruction form as promptly as possible. If your shares are held of record by a broker, bank or other custodian, nominee, trustee or fiduciary (an "Intermediary") and you have not given your Intermediary specific voting instructions, your Intermediary will NOT be able to vote your shares with respect to most of the proposals, including the election of directors. If you do not provide voting instructions over the Internet, by telephone, or by returning a completed, signed and dated proxy card or voting instruction form, your shares will not be voted with respect to those matters. Even if you have voted by proxy, you may still vote in person if you attend the meeting. Please note, however, that if your shares are held of record by an Intermediary and you wish to vote at the meeting, you must obtain a proxy issued in your name from that Intermediary.

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**AMYRIS, INC.**
5885 Hollis Street, Suite 100
Emeryville, California 94608

**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS**

**To Be Held May 29, 2020**

The 2020 Annual Meeting of Stockholders of Amyris, Inc. will be held on Friday, May 29, 2020 at 2:00 p.m. Pacific Time at our headquarters located at 5885 Hollis Street, Suite 100, Emeryville, California 94608 for the following purposes:

1. To elect the four Class I directors nominated by our Board of Directors and named herein to serve on the Board for a three-year term;
2. To ratify the appointment of Macias Gini & O'Connell LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020;
3. To approve, on a non-binding advisory basis, the compensation of our named executive officers (the "stockholder say-on-pay vote");
4. To approve our 2020 Equity Incentive Plan;
5. To approve the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d): (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by such Nasdaq rule;
6. To approve an amendment to our restated certificate of incorporation to effect an increase in the total number of our authorized shares from 255,000,000 to 355,000,000 and in the total number of authorized shares of common stock from 250,000,000 to 350,000,000; and
7. To act upon such other matters as may properly come before the annual meeting or any adjournments or postponements thereof.

These items of business are more fully described in the Proxy Statement accompanying this Notice of Annual Meeting of Stockholders. The Board of Directors has fixed the record date for the annual meeting as April 3, 2020. Only stockholders of record at the close of business on the record date may vote at the meeting or at any adjournment thereof. A list of stockholders eligible to vote at the meeting will be available for review for any purpose relating to the meeting during our regular business hours at our headquarters at 5885 Hollis Street, Suite 100, Emeryville, California 94608 for the ten days prior to the meeting.

You are cordially invited to attend the meeting in person. We are actively monitoring the public health and travel concerns of our shareholders and employees in light of COVID-19, as well as the related protocols that local and national governments may impose. As part of our precautions, we are considering the possibility of holding the 2020 Annual Meeting of Stockholders solely by means of remote communication (on the above date and time, via live audio webcast). We will publicly announce any alternative arrangements for the 2020 Annual Meeting of Stockholders as promptly as practicable in a press release available on our website. Whether or not you expect to attend the meeting, please vote as soon as possible in order to ensure your representation at the meeting. You may submit your proxy and voting instructions over the Internet, by telephone, or, if you receive a paper proxy card or voting instruction form in the mail, by completing, signing, dating and returning the accompanying proxy card or voting instruction form as promptly as possible. If your shares are held of record by an Intermediary and you have not given your Intermediary specific voting instructions, your Intermediary will NOT be able to vote your shares with respect to most of the proposals, including the election of directors. If you do not provide voting instructions over the Internet, by telephone, or by returning a completed, signed and dated proxy card or voting instruction form, your shares will not be voted with respect to those matters. Even if you have voted by proxy, you may still vote in person if you attend the meeting. Please note, however, that if your shares are held of record by an Intermediary and you wish to vote at the meeting, you must obtain a proxy issued in your name from that Intermediary.

**BY ORDER OF THE BOARD,**

Nicole Kelsey
*General Counsel and Secretary*

Emeryville, California
April 17, 2020

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**AMYRIS, INC.**

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**PROXY STATEMENT**
**2020 ANNUAL MEETING OF STOCKHOLDERS**

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These proxy materials are provided in connection with the solicitation of proxies by the Board of Directors (the "Board") of Amyris, Inc., a Delaware corporation (referred to as "Amyris", the "Company", "we", "us", or "our"), for our 2020 Annual Meeting of Stockholders to be held at 2:00 p.m. Pacific Time on Friday, May 29, 2020, at our principal executive offices, and for any adjournments or postponements of the annual meeting. These proxy materials were first sent on or about April 17, 2020 to stockholders entitled to vote at the annual meeting.

## Information Regarding Solicitation and Voting

Our principal executive offices are located at 5885 Hollis Street, Suite 100, Emeryville, California 94608, and our telephone number is (510) 450-0761. This Proxy Statement contains important information for you to consider when deciding how to vote on the matters brought before the meeting. Please read it carefully.

In accordance with rules and regulations adopted by the U.S. Securities and Exchange Commission (the "SEC"), we have elected to provide our stockholders with access to our proxy materials over the Internet. Accordingly, we intend to send a Notice of Internet Availability of Proxy Materials (the "Notice") on or about April 17, 2020 to most of our stockholders who owned our common stock at the close of business on April 3, 2020. The Notice includes instructions on how you can access our annual report and proxy statement and other soliciting materials on the Internet or, if you wish, request a printed set of such materials, a list of the matters to be considered at the 2020 annual meeting, and instructions as to how your shares can be voted. Most stockholders will not receive a printed copy of the proxy materials unless they request one in the manner set forth in the Notice. This permits us to conserve natural resources and reduces our printing costs, while giving stockholders a convenient and efficient way to access our proxy materials and vote their shares.

We will bear the expense of soliciting proxies. In addition to these proxy materials, our directors and employees (who will receive no compensation in addition to their regular salaries) may solicit proxies in person, by telephone or by email. We will reimburse Intermediaries for reasonable charges and expenses incurred in forwarding solicitation materials to their clients.

## Questions and Answers

**Who can vote at the meeting?**

The Board set April 3, 2020, as the record date for the meeting. If you owned shares of our common stock as of the close of business on April 3, 2020, you may attend and vote your shares at the meeting. Each stockholder is entitled to one vote for each share of common stock held on all matters to be voted on. As of April 3, 2020, there were 163,891,920 shares of our common stock outstanding and entitled to vote (as reflected in the records of our stock transfer agent).

**Why did I receive a Notice of Internet Availability of Proxy Materials in the mail instead of a full set of proxy materials?**

We are pleased to take advantage of the SEC rule that allows companies to furnish their proxy materials over the Internet. Accordingly, we have sent to most of our stockholders of record and beneficial owners a Notice of Internet Availability of Proxy Materials. Instructions on how you can access our annual report and proxy statement and other soliciting materials on the Internet or, if you wish, request a printed set of such materials, a list of the matters to be considered at the 2020 annual meeting, and instructions as to how your shares can be voted may be found in the Notice.

**Why did I receive a full set of proxy materials in the mail instead of a Notice of Internet Availability of Proxy Materials?**

Some stockholders may have instructed our transfer agent or their Intermediary to deliver stockholder communications, such as proxy materials, in paper form. If you would prefer to receive your proxy materials over the Internet, please follow the instructions provided on your proxy card or voting instruction form to vote using the Internet and, when prompted, indicate that you agree to receive or access stockholder communications electronically in future years.

**What is the quorum requirement for the meeting?**

The holders of a majority of our outstanding shares of common stock as of the record date must be present in person or represented by proxy at the meeting in order for there to be a quorum, which is required to hold the meeting and conduct business. If there is no quorum, the holders of a majority of the shares present at the meeting may adjourn the meeting to another date.

You will be counted as present at the meeting if you are present and entitled to vote in person at the meeting or you have properly submitted a proxy card or voting instruction form, or voted by telephone or over the Internet. Both abstentions and broker non-votes (as described below) are counted for the purpose of determining the presence of a quorum.

As of the record date of April 3, 2020, there were 163,891,920 shares of our common stock outstanding and entitled to vote (as reflected in the records of our stock transfer agent), which means that holders of 81,945,961 shares of our common stock must be present in person or by proxy for there to be a quorum.

**What proposals will be voted on at the meeting?**

There are six proposals scheduled to be voted on at the meeting:

- **Proposal 1 —** Election of the four Class I directors nominated by the Board and named herein to serve on the Board for a three-year term.
- **Proposal 2 —** Ratification of the appointment of Macias Gini & O'Connell LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.
- **Proposal 3 —** A non-binding advisory resolution to approve the compensation of our named executive officers (commonly referred to as a "stockholder say-on-pay vote").
- **Proposal 4 —** Approval of our 2020 Equity Incentive Plan.
- **Proposal 5 —** Approval of the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d): (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by such Nasdaq rule.
- **Proposal 6 —** Approval of an amendment to our restated certificate of incorporation to effect an increase in the total number of our authorized shares from 255,000,000 to 355,000,000 and in the total number of authorized shares of common stock from 250,000,000 to 350,000,000.

No appraisal or dissenters' rights exist for any action proposed to be taken at the meeting. We will also consider any other business that properly comes before the meeting. As of the date of this Proxy Statement, we are not aware of any other matters to be submitted for consideration at the meeting. If any other matters are properly brought before the meeting, the persons named in the enclosed proxy card or voting instruction form will vote the shares they represent using their best judgment.

**How does the Board recommend I vote on the proposals?**

The Board recommends that you vote:

- FOR each of the director nominees named in this Proxy Statement;

- FOR the ratification of Macias Gini & O'Connell LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.
- FOR the non-binding advisory vote to approve the compensation of our named executive officers;
- FOR the approval our 2020 Equity Incentive Plan;
- FOR the approval of the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d): (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by such Nasdaq rule; and
- FOR the amendment to our restated certificate of incorporation to increase the total number of authorized shares of our common stock.

**How do I vote my shares in person at the meeting?**

If your shares of Amyris common stock are registered directly in your name with our stock transfer agent, EQ Shareowner Services you are considered to be the stockholder of record with respect to those shares. As the stockholder of record, you have the right to vote in person at the meeting.

If your shares are held in a brokerage account or by another Intermediary, you are considered the beneficial owner of shares held in street name. As the beneficial owner, you are also invited to attend the meeting. However, since a beneficial owner is not the stockholder of record, you may not vote these shares in person at the meeting unless you obtain a "legal proxy" from the Intermediary (usually your broker) that is the record holder of the shares, giving you the right to vote the shares at the meeting. The meeting will be held on Friday, May 29, 2020 at 2:00 p.m. Pacific Time at our headquarters located at 5885 Hollis Street, Suite 100, Emeryville, California 94608. You can find directions to our headquarters on our company website at https://amyris.com/contact-us/.

**How can I vote my shares without attending the meeting?**

Whether you hold shares directly as a registered stockholder of record or beneficially in street name, you may vote without attending the meeting. You may vote by granting a proxy or, for shares held beneficially in street name, by submitting voting instructions to your broker, bank or other Intermediary. In most cases, you will be able to do this by using the Internet, by telephone or by mail.

- **Voting by Internet or telephone.** You may submit your proxy over the Internet or by telephone by following the instructions provided in the Notice, or, if you receive printed proxy materials, by following the instructions for Internet or telephone voting provided with your proxy materials and on your proxy card or voting instruction form.
- **Voting by mail.** If you receive printed proxy materials, you may submit your proxy by mail by completing, signing, dating and returning your proxy card or, for shares held beneficially in street name, by following the voting instructions included by your broker or other Intermediary. If you provide specific voting instructions, your shares will be voted as you have instructed.

**Can I vote my shares by filling out and returning the Notice?**

No. The Notice will, however, provide instructions on how to vote by Internet, by telephone, by requesting and returning a paper proxy card or voting instruction form, or by submitting a ballot in person at the meeting.

**What happens if I do not give specific voting instructions?**

If you are a stockholder of record and you either indicate when voting on the Internet or by telephone that you wish to vote as recommended by the Board, or, if you receive printed proxy materials, you sign and return a proxy card without giving specific voting instructions, then the proxy holders will vote your shares in the manner recommended by the Board on all matters presented in this Proxy Statement and as the proxy holders may determine in their discretion with respect to any other matters properly presented for a vote at the meeting.

If you are a beneficial owner of shares held in street name and do not provide the Intermediary that holds your shares with specific voting instructions, under stock market rules, the Intermediary that holds your shares may generally vote at its discretion only on routine matters and cannot vote on non-routine matters. If the Intermediary that holds your shares does not receive specific instructions from you on how to vote your shares on a non-routine matter, the Intermediary will inform the inspector of election that it does not have the authority to vote on this matter with respect to your shares. This is generally referred to as a "broker non-vote." For purposes of voting on non-routine matters, broker non-votes will not count as votes cast on such matters and, therefore, will not affect the outcome of Proposal 1 (which requires a plurality of votes properly cast in person or by proxy) or Proposals 3, 4 or 5 (which requires a majority of votes properly cast in person or by proxy), but will have the effect of a vote against Proposal 6 (which require votes from a majority of our outstanding shares of common stock entitled to vote at the meeting).

**Which proposals are considered "routine" and which are considered "non-routine"?**

The ratification of the appointment of Macias Gini & O'Connell LLP as our independent registered public accounting firm for 2020 (Proposal 2) is considered a "routine" matter under applicable rules. The election of directors (Proposal 1), the non-binding advisory stockholder say-on-pay vote on executive compensation (Proposal 3), the approval of our 2020 Equity Incentive Plan (Proposal 4), the approval of the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d) (Proposal 5), and the approval of the amendment to our restated certificate of incorporation (Proposal 6) are considered non-routine under applicable rules. An Intermediary cannot vote without instructions on non-routine matters, and therefore we expect there to be broker non-votes on Proposal 1, Proposal 3, Proposal 4, Proposal 5 and Proposal 6.

**How are votes counted?**

Votes will be counted by the inspector of election appointed for the meeting. The inspector of election will separately count "For" and "Withhold" votes and any broker non-votes in the election of directors (Proposal 1). With respect to the other proposals, the inspector of election will separately count "For" and "Against" votes, abstentions and, other than with respect to Proposal 2, which is considered a routine matter, any broker non-votes. Abstentions and broker non-votes will not count toward the vote totals for Proposals 1, 3, 4 and 5, but will be counted with the same effect as an "Against" vote for Proposal 6.

**What is the vote required to approve each of the Board's proposals?**

- **Proposal 1 — Election of the Board's four nominees for director.** The affirmative vote of a plurality, or the largest number, of the shares of our common stock present in person or by proxy at the annual meeting and entitled to vote is required for the election of the directors. This means that the four director nominees who receive the highest number of "For" votes (among votes properly cast in person or by proxy) will be elected to the board. Broker non-votes will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal.
- **Proposal 2 — Ratification of the appointment of Macias Gini & O'Connell LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.** This proposal must receive a "For" vote from the holders of a majority of the shares of our common stock properly casting votes for or against this proposal at the annual meeting in person or by proxy. Abstentions will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal.
- **Proposal 3 — Approval, on a non-binding advisory basis, of the compensation of our named executive officers.** This proposal must receive a "For" vote from the holders of a majority of the shares of common stock properly casting votes on this proposal at the annual meeting in person or by proxy. Abstentions and broker non-votes will not count toward the vote total and therefore will not affect the outcome of this proposal.
- **Proposal 4 — Approval of our 2020 Equity Incentive Plan.** This proposal must receive a "For" vote from the holders of a majority of the shares of common stock properly casting votes on this proposal at the annual meeting in person or by proxy. Abstentions and broker non-votes will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal.

- **Proposal 5 — Approval of the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d).** This proposal must receive a "For" vote from the holders of a majority of the shares of common stock casting votes on this proposal at the annual meeting in person or by proxy. Abstentions and broker non-votes will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal.
- **Proposal 6 — Approval of an amendment to our restated certificate of incorporation to effect an increase in the total number of authorized shares of our common stock**. This proposal must receive a "For" vote from the holders of a majority of our outstanding shares of common stock entitled to vote at the annual meeting, irrespective of the number of votes cast on this proposal at the meeting. Abstentions and broker non-votes will be counted and have the same effect as an "Against" vote for this proposal.

**What if I am party to a voting agreement related to a proposal?**

Under the terms of the voting agreements entered into between Amyris and each of Foris Ventures, LLC and certain affiliates of Vivo Capital LLC, each stockholder who is a party to such agreements has agreed, subject to the terms and conditions set forth in the applicable voting agreement, to vote the shares of our common stock subject to such voting agreement for the approval of Proposal 5 (Approval the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d)). As of the record date for the Annual Meeting, the parties to the voting agreements beneficially owned and were entitled to vote approximately 36.5% of our outstanding common stock.

Please refer to the section of this Proxy Statement entitled *"Proposal 5 — Approval the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d): (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by such Nasdaq rule. — Voting Agreements"*.

**How can I revoke my proxy and change my vote after I return my proxy card?**

You may revoke your proxy and change your vote at any time before the final vote at the meeting. If you are a stockholder of record, you may do this by signing and submitting a new proxy card with a later date (if you receive printed proxy materials), by using the Internet or voting by telephone (either of which must be completed by 11:59 p.m. Pacific Time on May 28, 2020 — your latest telephone or Internet proxy is counted), or by attending the meeting and voting in person. Attending the meeting alone will not revoke your proxy unless you specifically request that your proxy be revoked. If you hold shares through an Intermediary, you must contact that Intermediary directly to revoke any prior voting instructions.

**How can I find out the voting results of the meeting?**

The preliminary voting results will be announced at the meeting. The final voting results will be reported in a Current Report on Form 8-K, which we expect to file with the SEC within four business days after the meeting. If final voting results are not available within four business days after the meeting, we intend to file a Current Report on Form 8-K reporting the preliminary voting results within that period, and subsequently report the final voting results in an amendment to the Current Report on Form 8-K within four business days after the final voting results are known to us.

## Forward-Looking Statements

This Proxy Statement contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934. These statements may be identified by their use of such words as "expects," "anticipates," "intends," "hopes," "believes," "could," "may," "will," "projects", "continue", and "estimates," and other similar expressions, but these words are not the exclusive means of identifying such statements. We caution that a variety of factors, including but not limited to the following, could cause our results to differ materially from those expressed or implied in our forward-looking statements: our cash position and ability to fund our operations; difficulties in predicting future revenues and financial results; the potential loss of, or inability to secure relationships with, key distributors, customers or partners; the impact of the novel corona virus disease 2019 (COVID-19) on our operations; our lack of revenues generated from the sale of our renewable products; our inability to decrease costs to enable sales of our products at competitive prices; delays in production and commercialization of products due to technical, operational, cost and counterparty challenges; challenges in developing a customer base in markets with established and sophisticated competitors; currency exchange rate and commodity price fluctuations; changes in regulatory schemes governing export controls, genetically modified organisms, and renewable chemicals; and other risks detailed from time to time in filings we make with the SEC, including our Annual Reports on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K. Except as required by law, we assume no obligation to update any forward-looking information that is included or incorporated by reference in this Proxy Statement, whether as a result of new information, future events, or otherwise.

## Proposal 1 —
## Election of Directors

### General

Under our Certificate of Incorporation and Bylaws, the number of authorized Amyris directors has been fixed at 12 and the Board is divided into the following three classes with staggered three-year terms:

- Class I directors, whose term will expire at this annual meeting of stockholders and who are nominated for re-election;
- Class II directors, whose term will expire at the annual meeting of stockholders to be held in 2021; and
- Class III directors, whose term will expire at the annual meeting of stockholders to be held in 2022.

In accordance with our certificate of incorporation, the Board has assigned each member of the Board to one of the three classes, with the number of directors in each class divided as equally as reasonably possible. As of the date of this Proxy Statement, there are four Class I seats, four Class II seats (with one vacancy), and four Class III seats constituting the 12 seats on the Board.

Stockholders are being asked to vote for the four Class I nominees listed below to serve until our 2023 Annual Meeting of Stockholders and until each such director's successor has been elected and qualified, or until each such director's earlier death, resignation or removal. The nominees are all current directors of Amyris.

### Vote Required and Board Recommendation

Directors are elected by a plurality of the votes properly cast in person or by proxy. This means that the four Class I nominees receiving the highest number of affirmative (i.e., "For") votes will be elected. At the annual meeting, proxies cannot be voted for a greater number of persons than the four nominees named in this Proposal 1 and stockholders cannot cumulate votes in the election of directors. Shares represented by executed proxies will be voted by the proxy holders, if authority to do so is not withheld for any or all of the nominees, "For" the election of the four nominees named below. If any nominee is unable or declines to serve as a director at the time of the meeting, the proxies will be voted for a nominee, if any, designated by the Board to fill the vacancy. As of the date of this Proxy Statement, the Board is not aware that any nominee up for election is unable or will decline to serve as a director. If you hold shares through a bank, broker or other Intermediary of record, you must instruct your bank, broker or other Intermediary of record how to vote so that your vote can be counted on this proposal. Broker non-votes will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal.

**The Board recommends a vote "FOR" each nominee.**

**Business Experience and Qualifications of Directors**

The following tables and biographies set forth information for each nominee for election at the 2020 annual meeting and for each director of Amyris whose term of office will continue after the 2020 annual meeting:

**Nominees for Class I Directors for a Term Expiring in 2023**

| Name | Age | Amyris Offices and Positions |
|---|---|---|
| Geoffrey Duyk, M.D., Ph.D. | 60 | Director, Interim Chair of the Board and Member of Audit Committee and Operations and Finance Committee |
| Steven Mills | 64 | Director, Chair of Audit Committee, Chair of Operations and Finance Committee and member of Leadership Development and Compensation Committee |
| Carole Piwnica | 61 | Director, Chair of Leadership Development and Compensation Committee and Member of Nominating and Governance Committee and Operations and Finance Committee |
| James McCann | 68 | Director |

***Dr. Geoffrey Duyk*** has been a member of the Board since May 2012 and has served as the interim Chair of the Board since May 2014. Dr. Duyk previously served on the Board from May 2006 to May 2011. Dr. Duyk is a partner of Circularis Partners LP, a technology focused investment firm. Previously, Dr. Duyk served as a partner and managing director of TPG Alternative & Renewable Technologies, a technology focused investment firm (together with its affiliates, "TPG"), from 2004 to 2017. Prior to TPG, he served on the board of directors and was President of Research and Development at Exelixis, Inc., a biopharmaceutical company focusing on drug discovery, from 1996 to 2003. Prior to Exelixis, Dr. Duyk was Vice President of Genomics and one of the founding scientific staff at Millennium Pharmaceuticals, from 1993 to 1996. Before that, Dr. Duyk was an Assistant Professor at Harvard Medical School in the Department of Genetics and Assistant Investigator of the Howard Hughes Medical Institute. Dr. Duyk currently serves on the boards of directors of: Anuvia Plant Nutrients; Concentric Ag Corporation (formerly Inocucor Technologies, Inc.); and ReGen Holdings Limited as well as on the nonprofit Case Western Reserve University Board of Trustees. Dr. Duyk is also a member of the Institute Board of Directors of the Moffitt Cancer Center where he chairs the Research and Development committee. Dr. Duyk serves as a member of Scientific Advisory Boards for HudsonAlpha, and Lawrence Berkeley National Laboratory (DOE). Previously, Dr. Duyk served as a member of Scientific Advisory Boards for Bayer CropSciences, The Jackson Labs as well as numerous NIH advisory committees. He served on the board of directors of Beta Renewables from 2011 to 2017, Elevance Renewable Sciences from 2007 to 2018, The American Society of Human Genetics (nonprofit) from 2012 to 2018, EPIRUS Biopharmaceuticals, Inc. from July 2014 to July 2016, Galleon Pharmaceuticals, Inc. from 2007 to 2016, Genomatica, Inc. from 2012 to 2017, Karos Pharmaceuticals, Inc. from 2010 to 2015, The Wesleyan University Board of Trustees from 2008 to June 2014, Aerie Pharmaceuticals from August 2005 to June 2017, and DNAnexus, Inc. from 2011 to 2017. Dr. Duyk holds a Bachelor of Arts degree in Biology from Wesleyan University and a Ph.D. in Biochemistry and M.D. from Case Western Reserve University. Dr. Duyk's experience with the biotechnology industry enables him to provide insight and guidance to our management team and Board.

***Carole Piwnica*** has been a member of the Board since September 2009. Ms. Piwnica has been director of NAXOS S.A.R.L. (Switzerland), a consulting firm advising private investors, since January 2019 and director and chair of Arianna S.A. SICAF-SIF since April 2019. Previously, Ms. Piwnica was the director of Naxos UK from 2008 to 2018. She served as a director, from 1996 to 2006, and Vice-Chairman of Governmental Affairs, from 2000 to 2006, of Tate & Lyle Plc, a European food and agricultural ingredients company. She was a chairman of Amylum Group, a European food ingredient company and affiliate of Tate & Lyle Plc, from 1996 to 2000. Ms. Piwnica was a member of the board of directors of Aviva plc, a British insurance company, from May 2003 to December 2011, a member of the Biotech Advisory Council of Monsanto from

May 2006 to October 2009, a member of the board of directors of Dairy Crest from 2007 until 2010, a member of the board of directors of Toepfer Gmbh from 1996 until 2010, a member of the board of directors of Louis Delhaize from 2010 until 2013 and a member of the board of directors of Eutelsat from 2010 until 2019. In 2010, Ms. Piwnica was appointed as a member of the board of Sanofi. In 2014, she was appointed as a member of the board of Rothschild. Ms. Piwnica holds a Law degree from the Université Libre de Bruxelles and a Master of Laws degree from New York University. She was also a member of the bar association of the state of New York, USA from 1985 until 2019 and was a member of the bar association of Paris, France from 1988 until 2013. Based on her multinational corporate leadership experience and extensive legal and corporate governance experience, Ms. Piwnica contributes guidance to the management team and the Board in leadership of multinational agricultural processing businesses and on legal and corporate governance obligations and best practices.

***Steven Mills*** has been a member of the Board since August 2018. Mr. Mills has 40 years of experience in the fields of accounting, corporate finance, strategic planning, risk management, and mergers and acquisitions. He served as Chief Financial Officer of Amyris from May 2012 to December 2013. Prior to joining Amyris, Mr. Mills had a 33-year career at Archer-Daniels-Midland Company ("ADM"), one of the world's largest agricultural processors and food ingredient providers. At ADM, he held various senior executive roles, including Chief Financial Officer, Controller, and head of Global Strategic Planning. Since 2013, Mr. Mills has served as a consultant and advisor to clients in the private equity, agribusiness, and financial services fields. Mr. Mills currently serves on the boards of Black Hills Corporation (where he serves as the lead director), Farmers Edge, Inc., Illinois College (where he also serves as the chairman of the board), First Illinois Corporation (along with its wholly-owned banking subsidiary, Hickory Point Bank & Trust) and Arianna S.A. SICAF-SIF. Mr. Mills holds a Bachelor of Science degree in Mathematics from Illinois College. Mr. Mills' familiarity with Amyris, as well as his expertise in accounting, finance and management, enables him to assist our management team and Board build and improve on our business and financial processes and management.

***James McCann*** has been a member of the Board since May 2019. Mr. McCann is the founder and chairman of the board of directors of 1-800-FLOWERS.COM, Inc., a floral and gourmet foods gift retailer and distribution company founded in 1976, and served as chief executive officer of 1-800-FLOWERS.COM, Inc. from 1976 until June 2016. Mr. McCann also serves on the board of directors of International Game Technology PLC (formerly GTECH S.p.A. and Lottomatica Group S.p.A.) and has previously served on the board of directors of Willis Towers Watson PLC (formerly Willis Group Holdings PLC) from 2004 until May 2019 and The Scotts Miracle-Gro Company from 2014 until January 2020. Mr. McCann brings to the Board extensive experience in business leadership and innovation, which enables him to assist in the growth and development of our business.

**Incumbent Class II Directors with a Term Expiring in 2021**

| Name | Age | Amyris Offices and Positions |
|---|---|---|
| Philip Eykerman | 51 | Director |
| Frank Kung, Ph.D. | 71 | Director, Member of Operations and Finance Committee |
| John Melo | 54 | Director, President and Chief Executive Officer |

***Philip Eykerman*** has been a member of the Board since May 2017. Mr. Eykerman has served as the Executive Vice-President, Corporate Strategy & Acquisitions of Koninklijke DSM N.V. (together with its affiliates, "DSM"), a global science-based company in nutrition, health and sustainable living and an entity with which Amyris has a commercial and financial relationship and which is an owner of greater than five percent of the Company's outstanding common stock, since 2011. In this role, he is responsible for corporate and business group strategy development, budgeting and planning, improvement programs, and all M&A activities for DSM. In 2015, he was also appointed as a member of the DSM Executive Committee and at present is also responsible for the DSM Food Specialties as well as DSM Hydrocolloids activities. Next to these roles within DSM, he is also a Supervisory Board member of ChemicaInvest (DSM/CVC JV), AnQore TopCo B.V., and AOC Aliancys (DSM/CVC JV), and previously served as a member of the Supervisory Board of Patheon N.V. from March 2014 to August 2017. Before joining DSM, Mr. Eykerman worked for

14 years at McKinsey & Company of which the last 9 years as a Partner and leader of McKinsey's Chemicals Practice in the Benelux and France. Before that, he worked as a process/ project engineer for Fluor Daniel. He holds a Master's degree in Chemical Engineering from the KU Leuven (Belgium), and a Master's degree in Refinery Engineering from the Institut Francais du Pétrole (France). Mr. Eykerman's experience in corporate strategy, mergers and acquisitions and operations enables him to provide insight to the Board regarding potential new opportunities for Amyris.

***Dr. Frank Kung*** has been a member of the Board since November 2017. Dr. Kung is a founding member of Vivo Capital LLC ("Vivo"), a healthcare focused investment firm founded in 1996 in Palo Alto, California, whose fund under management is an owner of greater than five percent of the Company's outstanding common stock. Dr. Kung started his career in the biotechnology industry in 1979 when he joined Cetus Corporation. He later co-founded Cetus Immune Corporation in 1981, which was acquired by its parent company in 1983. In 1983, he co-founded Genelabs Technologies, Inc. where he served as Chairman and CEO until 1995. During his tenure in Genelabs, he brought the company public in 1991, and built it to a 175 employee international biotech company with operations in the United States, Belgium, Singapore, Switzerland and Taiwan. Dr. Kung holds a Bachelor of Science degree in chemistry from the National Tsing Hua University in Taiwan, and a Doctor of Philosophy degree in molecular biology and a Master of Business Administration degree from the University of California, Berkeley. Dr. Kung currently serves on the board of directors of a number of healthcare and biotechnology companies. Dr. Kung's experience in healthcare and biotechnology and investing in companies enables him to provide the Board and management with guidance regarding the Company's business strategy and access to financial markets.

***John Melo*** has nearly three decades of combined experience as an entrepreneur and thought leader in the global fuels industry and technology innovation. Mr. Melo has served as our Chief Executive Officer and a director since January 2007 and as our President since June 2008. Before joining Amyris, Mr. Melo served in various senior executive positions at BP Plc (formerly British Petroleum), one of the world's largest energy firms, from 1997 to 2006, most recently as President of U.S. Fuels Operations. During his tenure at BP, Mr. Melo also served as Chief Information Officer of the refining and marketing segment, Senior Advisor for e-business strategy to Lord Browne, BP Chief Executive, and Director of Global Brand Development. Before joining BP, Mr. Melo was with Ernst & Young, an accounting firm, and a member of the management teams of several startup companies, including Computer Aided Services, a management systems integration company, and Alldata Corporation, a provider of automobile repair software to the automotive service industry. Mr. Melo currently serves on the board of directors of Renmatix, Inc., the Industrial and Environmental section of the Biotechnology Innovation Organization, and the California Life Sciences Association. Mr. Melo was formerly an appointed member to the U.S. section of the U.S.-Brazil CEO Forum. Mr. Melo's experience as a senior executive at one of the world's largest energy companies provides critical leadership in shaping strategic direction and business transactions, and in building teams to drive innovation.

**Incumbent Class III Directors with a Term Expiring in 2022**

| Name | Age | Amyris Offices and Positions |
|---|---|---|
| John Doerr | 68 | Director, Chair of Nominating and Governance Committee |
| Christoph Goppelsroeder | 61 | Director |
| Lisa Qi | 48 | Director |
| Patrick Yang, Ph.D. | 71 | Director, Member of Leadership Development and Compensation Committee |

***John Doerr*** has been a member of the Board since 2006. Mr. Doerr has been Chairman at Kleiner Perkins Caufield & Byers ("KPCB"), a venture capital firm, since 1980. Mr. Doerr currently serves on the board of directors of Alphabet Inc., as well as on the board of directors of numerous private companies, and previously served as a director of Zynga, Inc. from April 2013 to May 2017. Mr. Doerr holds a Bachelor of Science degree and a Master's degree in electrical engineering from Rice University, and a Master of Business Administration degree from Harvard University. Mr. Doerr's global business leadership as general partner of KPCB, as well as his outside board experience as director of several public and private companies, enables him to provide valuable insight and guidance to our management team and the Board.

***Christoph Goppelsroeder*** has been a member of the Board since November 2017. Mr. Goppelsroeder has served as the President and CEO of DSM Nutritional Products Ltd., a supplier of vitamins, carotenoids and other nutritional solutions, since 2013 and is a member of the DSM Executive Committee. Mr. Goppelsroeder has previously worked at Boston Consulting, Syngenta in its seed care business unit, and F. Hoffman-La Roche in its fine chemicals and vitamins division until the acquisition of such division by DSM in 2003. Mr. Goppelsroeder holds a degree in Engineering from the Swiss Federal Institute of Technology and a Master of Business Administration degree from Insead, Fontainebleau. Mr. Goppelsroeder's experience in the health and nutrition market enables him to provide the Board with critical insight into potential growth areas of the Company's business.

***Lisa Qi*** has been a member of the Board since May 2019. Ms. Qi is the founder and chief executive officer of Silver Gift Limited and Daling Xinchao (Beijing) Trading Co., Ltd., which operate the Daling Family e-commerce platform in China. Ms. Qi brings deep knowledge and significant experience in the areas of e-commerce, product branding, sales and the management of high-growth companies, which enable her to make a strategic contribution to the Board and provide guidance to the management team in these areas.

***Dr. Patrick Yang*** has been a member of the Board since July 2014. Dr. Yang is a biotech industry consultant. He was Executive Vice President of Juno Therapeutics, Inc., a biopharmaceutical company focused on developing innovative cellular immunotherapies for the treatment of cancer, from September 2017 to January 2019. From January 2010 through March 2013, Dr. Yang served as Executive Vice President and Global Head of Technical Operations for F. Hoffmann-La Roche Ltd. ("Roche"), where he was responsible for Roche's pharmaceutical and biotech manufacturing operations, process development, quality, regulatory, supply management and distribution functions. Before joining Roche, Dr. Yang worked for Genentech Inc., where he served as Executive Vice President of Product Operations, and was responsible for manufacturing, process development, quality, regulatory affairs and distribution functions. Prior to joining Genentech Inc., Dr. Yang worked for Merck & Co., where he held several leadership roles including Vice President of Asia/Pacific Manufacturing Operations and Vice President of Supply Chain Management. He also previously worked at General Electric Co. and Life Systems, Inc. Dr. Yang currently serves on the boards of directors of Codexis, Inc. and PharmaEssentia Corporation, and previously served on the board of directors of Andeavor (formerly Tesoro Corporation) from December 2010 to September 2018, and Celladon Corporation from March 2014 until May 2015. Dr. Yang's experience with the biotechnology industry and operations enable him to provide insight and guidance to our management team and the Board in these areas.

**Arrangements Concerning Selection of Directors**

In February 2012, pursuant to a Letter Agreement (the "Letter Agreement") entered into in connection with the sale of our common stock to certain investors including Biolding Investment SA ("Biolding"), Naxyris S.A. ("Naxyris"), an investment vehicle owned by Naxos Capital Partners S.C.A. ("Naxos"), and Maxwell (Mauritius) Pte Ltd ("Maxwell"), we agreed to appoint, and to use reasonable efforts consistent with the Board's fiduciary duties to cause the re-nomination by the Board in the future of:

- One person designated by Biolding to serve as a member of the Board. Pursuant to the Letter Agreement, Biolding designated His Highness Sheikh Abdullah bin Khalifa Al Thani ("HH") to serve as the Biolding representative on the Board, and HH was appointed to the Board in March 2012. Pursuant to the Letter Agreement, Biolding's designation rights would terminate upon either a sale of Amyris or Biolding holding less than 173,010 shares of our common stock. On May 14, 2019, HH resigned from the Board, and in connection therewith Biolding permanently waived its Board designation right.
- One person designated by Naxyris to serve as a member of the Board. Pursuant to the Letter Agreement, Naxyris designated Ms. Piwnica (who was already on the Board) to serve as the Naxyris representative on the Board. Naxyris' designation rights terminate upon either a sale of Amyris or Naxyris holding less than 115,340 shares of our common stock. As of March 31, 2020, Naxyris beneficially owned 5,743,038 shares of our common stock, representing approximately 3.4% of our outstanding common stock. Ms. Piwnica holds interests in and is director of NAXOS S.A.R.L., a consulting firm advising private investors and an affiliate of Naxos. In addition, on August 22, 2019, Ms. Piwnica became the indirect owner of both Naxyris and Naxos through her ownership of

Arianna S.A. SICAF-SIF. Ms. Piwnica receives compensation and benefits from both Naxyris and NAXOS S.A.R.L. pursuant to their respective standard compensation policies and practices.

In June 2010, we issued 7,101,548 shares of our Series D preferred stock to Total Raffinage Chimie ("Total") that converted into 643,401 shares of our common stock upon the completion of our initial public offering in September 2010. In connection with such equity investment, we entered into a letter agreement with Total, pursuant to which we agreed to appoint a person designated by Total to serve as a member of the Board, and to use reasonable efforts consistent with the Board's fiduciary duties to cause the director designated by Total to be re-nominated by the Board in the future. Pursuant to the letter agreement, Total initially designated Philippe Boisseau to serve as the Total representative on the Board and, following Mr. Boisseau's resignation from the Board in October 2016, Total designated Christophe Vuillez to serve as the Total representative on the Board. Mr. Vuillez resigned from the Board on May 20, 2019 and Total has not designated a replacement for Mr. Vuillez. Total's designation rights terminate upon the earlier of Total holding less than 321,700 shares of our common stock or a sale of Amyris. As of March 31, 2020, Total beneficially owned 9,176,833 shares of our common stock, representing approximately 5.6% of our outstanding common stock.

Pursuant to a Stockholder Agreement entered into in May 2017, and subsequently amended and restated in August 2017, in connection with the sale of our Series B 17.38% Convertible Preferred Stock and warrants to DSM (the "DSM Stockholder Agreement"), we agreed to appoint, and to use reasonable efforts consistent with the Board's fiduciary duties to cause the re-nomination by the Board in the future of, two persons designated by DSM to serve as members of the Board. Pursuant to the DSM Stockholder Agreement, DSM initially designated Mr. Eykerman to serve as a DSM representative on the Board and, following the amendment and restatement of the DSM Stockholder Agreement in August 2017, DSM designated Mr. Goppelsroeder to serve as the second DSM representative on the Board. DSM's designation rights terminate, with respect to one designee, at such time as DSM beneficially owns less than 10% of our outstanding common stock and, with respect to both designees, at such time as DSM beneficially owns less than 4.5% of our outstanding common stock. As of March 31, 2020, DSM beneficially owned 27,001,551 shares of our common stock, representing approximately 15.2% of our outstanding common stock. Messrs. Eykerman and Goppelsroeder are employees of DSM and receive compensation and benefits from DSM pursuant to its standard compensation policies and practices.

In August 2017, pursuant to a Stockholder Agreement (the "Vivo Stockholder Agreement") entered into in connection with the sale of our common stock, Series D Convertible Preferred Stock and warrants to Vivo Capital LLC ("Vivo"), we agreed to appoint, and to use reasonable efforts consistent with the Board's fiduciary duties to cause the re-nomination by the Board in the future of, one person designated by Vivo to serve as a member of the Board. Pursuant to the Vivo Stockholder Agreement, Vivo designated Dr. Kung to serve as the Vivo representative on the Board. Vivo's designation rights terminate at such time as Vivo beneficially owns less than 4.5% of our outstanding common stock. As of March 31, 2020, Vivo beneficially owned 16,868,473 shares of our common stock, representing approximately 9.7% of our outstanding common stock. Dr. Kung is a founding member of Vivo and receives compensation and benefits from Vivo pursuant to its standard compensation policies and practices.

Mr. Doerr and Dr. Duyk were initially designated to serve on the Board by KPCB and TPG, respectively, pursuant to a voting agreement as most recently amended and restated on June 21, 2010 (Dr. Duyk resigned from the Board in May 2011 and was re-appointed to the Board in May 2012). As of the date of this Proxy Statement, notwithstanding the expiration of the voting agreement upon completion of our initial public offering in September 2010, Mr. Doerr and Dr. Duyk continue to serve on the Board and we expect each of them to continue to serve as a director until his resignation or until his successor is duly elected by the holders of our common stock. Mr. Doerr receives compensation and benefits from KPCB pursuant to its standard compensation policies and practices, and Dr. Duyk retains a carried interest in certain funds managed by TPG.

**Independence of Directors**

Under the corporate governance rules of The Nasdaq Stock Market ("Nasdaq"), a majority of the members of the Board must qualify as "independent," as affirmatively determined by the Board. The Board and the Nominating and Governance Committee of the Board consult with our legal counsel to ensure that

the Board's determinations are consistent with all relevant securities and other laws and regulations regarding the definition of "independent," including those set forth in the applicable Nasdaq rules. The Nasdaq criteria include various objective standards and a subjective test. A member of the Board is not considered independent under the objective standards if, for example, he or she is, or at any time during the past three years was, employed by Amyris, he or she received compensation (other than standard compensation for Board service) in excess of $120,000 during a period of twelve months within the past three years, or he or she is an executive officer of any organization to which Amyris made, or from which Amyris received, payments for property or services (other than payments arising solely from investments in our securities or payments under non-discretionary charitable contribution matching programs) in the current or any of the past three fiscal years that exceed 5% of the recipient's gross revenues for that year, or $200,000, whichever is more.

The subjective test under the Nasdaq rules for director independence requires that each independent director not have a relationship which, in the opinion of the Board, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The subjective evaluation of director independence by the Board was made in the context of the objective standards referenced above. In making independence determinations, the Board generally considers commercial, financial and professional services, and other transactions and relationships between Amyris and each director and his or her family members and affiliated entities.

Based on such criteria, the Board determined that (i) Mr. Melo is not independent because he is an Amyris employee and (ii) Messrs. Eykerman and Goppelsroeder are not independent because they are each employees of DSM (with which we have commercial and financial relationships, as described below under "Transactions with Related Persons").

For each of the directors other than Messrs. Melo, Eykerman and Goppelsroeder, the Board determined that none of the transactions or other relationships of such directors (and their respective family members and affiliated entities) with Amyris, our executive officers and our independent registered public accounting firm exceeded Nasdaq objective standards and none would otherwise interfere with the exercise of independent judgment in carrying out his or her responsibilities as a director. The following is a description of these relationships:

- Mr. Doerr indirectly owns all of the membership interests in Foris Ventures, LLC ("Foris"), which beneficially owned 67,268,358 shares of our common stock representing approximately 37.8% of our outstanding common stock as of March 31, 2020. Mr. Doerr is also a manager of the general partners of entities affiliated with KPCB Holdings, Inc. As of March 31, 2020, KPCB Holdings, Inc., as nominee for entities affiliated with KPCB, held 278,882 shares of our common stock, which represented approximately 0.2% of our outstanding common stock.
- Dr. Kung is a founding member of, and was designated to serve as a director by Vivo. As of March 31, 2020, Vivo beneficially owned 16,868,473 shares of our common stock, representing approximately 9.7% of our outstanding common stock. In addition, Dr. Kung's daughter is a non-executive employee of Amyris.
- Ms. Piwnica was designated to serve as a director by Naxyris. On August 22, 2019, Ms. Piwnica became the indirect owner of 100% of Naxyris through Arianna S.A. SICAF-SIF. As of March 31, 2020, Naxyris beneficially owned 5,743,038 shares of our common stock, representing approximately 3.4% of our outstanding common stock.

Consistent with these considerations, after a review of all relevant transactions and relationships between each director, any of his or her family members and affiliated entities, Amyris, our executive officers and our independent registered public accounting firm, the Board affirmatively determined that a majority of the Board is comprised of independent directors, and that the following directors are independent: John Doerr, Geoffrey Duyk, Frank Kung, James McCann, Steven Mills, Carole Piwnica, Lisa Qi and Patrick Yang.

**Board Leadership Structure**

The Board is composed of our Chief Executive Officer, John Melo, and ten non-management directors. Geoffrey Duyk, one of our independent directors, currently serves the principal Board leadership role as the Board's interim Chair. The Board expects to appoint an independent director as permanent Chair. The Board does not have any policy that the Chair must necessarily be separate from the Chief Executive Officer, but the Board appointed Dr. Duyk as interim Chairman in May 2014 until a permanent Chair could be identified. Dr. Duyk's (and his successor's) responsibilities as Board Chair include working with management to develop agendas for Board meetings, calling special meetings of the Board, presiding at executive sessions of independent Board members, gathering input from Board members on Chief Executive Officer performance and providing feedback to the Chief Executive Officer, gathering input from Board members after meetings and through an annual self-assessment process and communicating feedback to the Board and the Chief Executive Officer, as appropriate, and serving as Chief Executive Officer in the absence of another designated Chief Executive Officer. The Board believes that having an independent Chair helps reinforce the Board's independence from management in its oversight of our business and affairs. In addition, the Board believes that this structure helps to create an environment that is conducive to objective evaluation and oversight of management's performance and related compensation, increasing management accountability and improving the ability of the Board to monitor whether management's actions are in our best interests and those of our stockholders. Further, this structure permits our Chief Executive Officer to focus on the management of our day-to-day operations. Accordingly, we believe our current Board leadership structure contributes to the effectiveness of the Board as a whole and, as a result, is the most appropriate structure for us at the present time.

**Role of the Board in Risk Oversight**

We consider risk as part of our regular evaluation of business strategy and decisions. Assessing and managing risk is the responsibility of our management, which establishes and maintains risk management processes, including prioritization processes, action plans and mitigation measures, designed to balance the risk and benefit of opportunities and strategies. It is management's responsibility to anticipate, identify and communicate risks to the Board and/or its committees. The Board as a whole oversees our risk management systems and processes through regular communications with management and quarterly discussions with the Audit Committee and/or the Board, as applicable. As part of its oversight role, the Audit Committee receives updates regarding enterprise risk prioritization and mitigation and engages in discussions with management on a regular basis. In addition, the Board uses its committees to assist in its risk oversight function as follows:

- The Audit Committee has responsibility for overseeing our financial controls and risk and legal and regulatory matters.
- The Leadership Development and Compensation Committee ("LDCC") is responsible for oversight of risk associated with our compensation programs and plans.
- The Nominating and Governance Committee ("NGC") is responsible for oversight of Board processes and corporate governance related risks.
- The Operations and Finance Committee ("Operations Committee") is responsible for oversight of risk associated with our business operations and financing activities.

The Board receives regular reports from committee Chairs regarding the committees' activities. In addition, discussions with the Board regarding our strategic plans and objectives, business results, financial condition, compensation programs, strategic transactions, and other matters include discussions of the risks associated with the particular item under consideration.

**Meetings of the Board and Committees**

During 2019, the Board held six meetings, and its four standing committees during 2019 (the Audit Committee, LDCC, NGC and Operations Committee) collectively held 70 meetings. Of such meetings, the Audit Committee held 53 meetings, the LDCC held eight meetings, the NGC held four meetings and the Operations Committee held five meetings. With the exception of Messrs.. Kung, and Goppelsroeder and Ms. Piwnica, each incumbent director attended at least 75% of the meetings of the Board and of the

committees on which such director served that were held during the period that such director served in 2019. The Board's policy is that directors are encouraged to attend our annual meetings of stockholders. No directors attended our 2019 annual meeting of stockholders.

The following table provides membership and meeting information for the Board and its standing committees in 2019:

| Member of the Board in 2019 | Board | Audit Committee | Leadership Development and Compensation Committee | Nominating and Governance Committee | Operations and Finance Committee |
|---|---|---|---|---|---|
| John Doerr | X | | | Chair | |
| Geoffrey Duyk | Chair | X | | | X |
| Philip Eykerman | X | | | | |
| Christoph Goppelsroeder[(1)] | X | | | | |
| Frank Kung[(2)] | X | | | | X |
| James McCann[(3)] | X | | | | |
| John Melo | X | | | | |
| Steven Mills | X | X | X | | Chair |
| Carole Piwnica[(4)] | X | | Chair | X | X |
| Lisa Qi[(3)] | X | | | | |
| HH Sheikh Abdullah bin Khalifa Al Thani[(5)] | X | | | | |
| Christophe Vuillez[(6)] | X | | | | |
| R. Neil Williams | X | Chair | | | X |
| Patrick Yang | X | | X | | |
| ***Total meetings in 2019[(7)]*** | ***6*** | ***53[(8)]*** | ***8*** | ***4*** | ***5*** |

(1) Mr. Goppelsroeder attended 3 of 6 Board meetings held during 2019.

(2) Mr. Kung attended 4 of 6 Board meetings held during 2019 and 3 of 5 Operations Committee meetings held in 2019.

(3) Mr. McCann and Ms. Qi were appointed to the Board on May 14, 2019.

(4) Ms. Piwnica attended 3 of 5 Operations Committee meetings held in 2019.

(5) HH attended 0 of 6 Board meetings held during 2019. HH resigned from the Board effective May 14, 2019.

(6) Mr. Vuillez attended 2 of 6 Board meetings held during 2019. Mr. Vuillez resigned from the Board effective May 20, 2019.

(7) Includes one concurrent meeting of the Board and the LDCC.

(8) During 2019, the Audit Committee held special meetings in connection with the restatement of our financial statements for the year ended December 31, 2017, and the quarterly and year-to-date periods ended March 31, 2018, June 30, 2018 and September 30, 2018,

**Committees of the Board**

The Board has established an Audit Committee, a LDCC, a NGC and an Operations Committee, each as described below. Members are appointed by the Board to serve on these committees until their resignations or until otherwise determined by the Board.

***Audit Committee***

The Audit Committee was established by the Board in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934 (the "Exchange Act"), and assists the Board in fulfilling the Board's oversight of our accounting and system of internal controls, the quality and integrity of our financial reports, legal and regulatory matters, and the retention, independence and performance of our independent registered public accounting firm.

Under Nasdaq rules, we must have an audit committee of at least three members, each of whom must be independent as defined under the rules and regulations of Nasdaq and the Securities and Exchange Commission (the "SEC"). Our Audit Committee is currently composed of two directors: Dr. Duyk and Mr. Mills. Mr. Mills was appointed by the Board as the Chair of the Audit Committee on February 26, 2020, effective April 1, 2020. Before that, Neil Williams was the Chair of the Audit Committee from May 2013 through his resignation, effective March 31, 2020. Management is currently working to appoint a third member to the Audit Committee in order to maintain compliance with the independence requirements of applicable Nasdaq and SEC rules and regulations. The Board has determined that each member of the Audit Committee is independent (as defined in the relevant Nasdaq and SEC rules and regulations), and is financially literate and able to read and understand fundamental financial statements, including a company's balance sheet, income statement and cash flow statement. In addition, the Board has determined that Mr. Mills is an "audit committee financial expert" as defined in Item 407(d)(5)(ii) of Regulation S-K promulgated under the Securities Act of 1933, as amended (the "Securities Act"), with employment experience in finance and accounting and other comparable experience that results in his financial sophistication. Being an "audit committee financial expert" does not impose on Mr. Mills any duties, obligations or liabilities that are greater than are generally imposed on him as a member of the Audit Committee and the Board. The Board has adopted a written charter for our Audit Committee that is posted on our company website at http://investors.amyris.com/corporate-governance.

The Audit Committee performs, among others, the following functions:

- oversees our accounting and financial reporting processes and audits of our consolidated financial statements;
- oversees our relationship with our independent auditors, including appointing or changing our independent auditors and ensuring their independence;
- oversees IT risk management and cybersecurity matters;
- reviews and approves the audit and permissible non-audit services to be provided to us by our independent auditors;
- facilitates communication among our independent auditors, our financial and senior management, and the Board; and
- monitors the periodic reviews of the adequacy of our accounting and financial reporting processes and systems of internal control that are conducted by our independent auditors and our financial and senior management.

In addition, the Audit Committee generally reviews and approves any proposed transaction between Amyris and any related party, establishes procedures for the receipt, retention and treatment of complaints received by Amyris regarding accounting, internal accounting controls or auditing matters, and for the confidential, anonymous submission by Amyris employees of their concerns regarding suspected violations of laws, governmental rules or regulations, accounting, internal accounting controls or auditing matters, or company policies (including the administration of our whistleblower policy), and oversees the review of any complaints and submissions received through the complaint and anonymous reporting procedures.

***Leadership Development and Compensation Committee***

Under Nasdaq rules, compensation of the executive officers of a company must be determined, or recommended to the Board for determination, either by independent directors constituting a majority of the Board's independent directors in a vote in which only independent directors participate, or by a compensation committee composed solely of independent directors. Amyris has established the LDCC for such matters,

which is currently composed of three directors: Mr. Mills, Ms. Piwnica and Dr. Yang. Ms. Piwnica is the Chair of the LDCC. The Board, after consideration of all factors specifically relevant to determining whether any of Mr. Mills, Ms. Piwnica or Dr. Yang has a relationship to Amyris that is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including, but not limited to, (i) the source of compensation of such director, including any consulting, advisory or other compensatory fee paid by Amyris to such director and (ii) whether such director is affiliated with Amyris, has determined that each member of the LDCC is independent (as defined in the relevant Nasdaq and SEC rules and regulations). The Board has adopted a written charter for our LDCC that is posted on our company website at http://investors.amyris.com/corporate-governance.

The purpose of the LDCC is to provide guidance and periodic monitoring for all of our compensation, benefits and equity programs. The LDCC, through delegation from the Board, has principal responsibility to evaluate, recommend, approve and review executive officer and director compensation arrangements, plans, policies and programs maintained by Amyris, and may also make recommendations to the Board regarding the Board's remaining responsibilities relating to executive compensation. The LDCC discharges the responsibilities of the Board relating to compensation of our executive officers, and, among other things:

- reviews and approves the compensation of our executive officers;
- reviews and recommends to the Board the compensation of our non-employee directors;
- reviews and recommends to the Board the terms of material amendments to equity compensation agreements with our executive officers;
- reviews and approves the terms of cash-based compensation agreements with our executive officers;
- reviews and approves the administration our stock and equity incentive plans;
- reviews and makes recommendations to the Board with respect to incentive compensation and equity incentive plans other than as described above;
- establishes and reviews our overall compensation strategy; and
- reviews with the Chief Executive Officer and Board leadership the succession plans for senior management positions.

The LDCC also reviews the Executive Compensation section of our Proxy Statement, and has previously prepared a report of the LDCC for inclusion in prior proxy statements in accordance with SEC rules. The LDCC has authority to form and delegate authority to subcommittees, as appropriate.

The Board has established a Management Committee for Employee Equity Awards ("MCEA"), consisting of our Chief People Officer and our Chief Executive Officer. The MCEA may grant equity awards to employees who are not officers (as that term is defined in Section 16 of the Securities Exchange Act of 1934 (the "Exchange Act") and Rule 16a-1 promulgated under the Exchange Act) of Amyris, provided that the MCEA is only authorized to grant equity awards that meet grant guidelines approved by the Board or LDCC. These guidelines set forth, among other things, any limit imposed by the Board or LDCC on the total number of shares of our common stock that may be subject to equity awards granted to employees by the MCEA, and any requirements as to the size of an award based on the seniority of an employee or other factors.

Under its charter, the LDCC has the authority, at Amyris' expense, to retain legal and other consultants, accountants, experts and compensation or other advisors of its choice to assist the LDCC in connection with its functions. Compensia, Inc. ("Compensia") served as the Committee's compensation consultant from 2012 through 2018. In addition, during the past fiscal year, the LDCC engaged Compensia, as its compensation consultant. Compensia provided the following services during 2019 (or in connection with 2019 compensation):

- reviewed and provided recommendations on the composition of Amyris's compensation peer group, and provided compensation data relating to certain executives at the selected peer group companies;
- conducted a review of the total compensation arrangements for executive officers of Amyris;
- provided advice on executive officers' compensation, including composition of compensation for base salary, short-term incentive (cash bonus) plan and long-term incentive (equity) plans;

- provided advice on executive officers' cash bonus plan;
- assisted with executive equity program design, including analysis of equity mix, aggregate share usage and target grant levels;
- provided advice and recommendations regarding executive perquisites and Amyris's executive severance plan;
- updated the LDCC on emerging trends/best practices and regulatory requirements in the area of executive and director compensation, including equity and cash compensation; and
- provided advice and recommendations regarding certain non-executive employee compensation arrangements and equity grants.

The LDCC determined that Compensia did not have any relationships with Amyris or any of its officers or directors or any conflicts of interest that would impair Compensia's independence.

The Human Resources, Finance and Legal departments of Amyris work with our Chief Executive Officer to design and develop new compensation programs applicable to our executive officers and non-employee directors, to recommend changes to existing compensation programs, to recommend financial and other performance targets to be achieved under those programs, to prepare analyses of financial data, to prepare peer group compensation comparisons and other committee briefing materials, and to implement the decisions of the LDCC. Members of the Human Resources departments and our Chief Executive Officer also meet separately with Compensia to convey information on proposals that management may make to the LDCC, as well as to allow Compensia to collect information about Amyris to develop its recommendations. In addition, our Chief Executive Officer conducts reviews of the performance and compensation of our other executive officers, and based on these reviews and input from Compensia and our Human Resources department, makes recommendations regarding compensation for such executive officers directly to the LDCC.

For the Chief Executive Officer's compensation, Compensia reviews relevant market data with the Chair of the LDCC, as well as the performance of the Chief Executive Officer, and based on such review makes a recommendation regarding the Chief Executive Officer's compensation, which is then presented to the LDCC. None of our executive officers participated in the determinations or deliberations of the LDCC regarding the amount of any component of his or her own 2019 compensation.

***Operations and Finance Committee***

On May 14, 2019, the Board established the Operations Committee, which is currently composed of four directors: Drs. Duyk and Kung, Mr. Mills and Ms. Piwnica. Mr. Mills is the Chair of the Operations Committee. The Board has determined that each member of the Operations Committee is independent (as defined in the relevant Nasdaq and SEC rules and regulations). The Board has adopted a written charter for our Operations Committee that is posted on our company website at http://investors.amyris.com/corporate-governance.

The purpose of the Operations Committee is to assist the Board with respect to financial and operational matters and transactions, including:

- reviewing and approving significant capital expenditures and strategic operational and financing transactions;
- overseeing the Company's capitalization, including the structure and amount of its debt and equity;
- reviewing the Company's business operations and plans and operational performance; and
- reviewing the Company's business operations and plans that may involve sensitive competitive issues.

*Nominating and Governance Committee*

Under Nasdaq rules, director nominees must be selected, or recommended for the Board's selection, either by independent directors constituting a majority of the Board's independent directors in a vote in which only independent directors participate, or by a nominations committee composed solely of independent directors. Amyris has established the Nominating and Governance Committee for such matters, which is currently composed of two directors: Mr. Doerr and Ms. Piwnica. Mr. Doerr is the Chair of the Nominating and Governance Committee. The Board has determined that each member of the Nominating and Governance Committee is independent (as defined in the relevant Nasdaq and SEC rules and regulations). The Board has adopted a written charter for our Nominating and Governance Committee that is posted on our company website at http://investors.amyris.com/corporate-governance.

The purpose of the Nominating and Governance Committee is to ensure that the Board is properly constituted to meet its fiduciary obligations to stockholders and Amyris, and to assist the Board with respect to corporate governance matters, including:

- identifying, considering and nominating candidates for membership on the Board;
- developing, recommending and periodically reviewing corporate governance guidelines and policies for Amyris (including our Corporate Governance Principles, Code of Business Conduct and Ethics and Insider Trading Policy); and
- advising the Board on corporate governance and Board performance matters, including recommendations regarding the structure and composition of the Board and Board committees.

The Nominating and Governance Committee also monitors the size, leadership and committee structure and composition of the Board and makes any recommendations for changes to the Board, reviews our narrative disclosures in SEC filings regarding the director nomination process, director qualifications, Board leadership structure and risk oversight by the Board, considers and approves requested waivers for our directors or executive officers under our Code of Business Conduct and Ethics, reviews and makes recommendations to the Board regarding formal procedures for stockholder communications with members of the Board, and oversees an annual self-assessment process for the Board.

*Director Nomination Process*

In carrying out its duties to consider and nominate candidates for membership on the Board, the Nominating and Governance Committee considers a mix of perspectives, qualities and skills that would contribute to the overall corporate goals and objectives of Amyris and to the effectiveness of the Board. The Nominating and Governance Committee's goal is to nominate directors who will provide a balance of industry, business and technical knowledge, experience and capability. To this end, the Nominating and Governance Committee considers a variety of characteristics for director candidates, including demonstrated ability to exercise sound business judgment, relevant industry or business experience, understanding of and experience with issues and requirements facing public companies, excellence and a record of professional achievement in the candidate's field, relevant technical knowledge or aptitude, having sufficient time and energy to devote to the affairs of Amyris, independence for purposes of compliance with Nasdaq and SEC rules and regulations, as applicable, and commitment to rigorously represent the long-term interests of our stockholders. Although the Nominating and Governance Committee uses these and other criteria to evaluate potential nominees, we have no stated minimum criteria for nominees. While we do not have a formal policy with regard to the consideration of diversity in identifying director nominees, the Nominating and Governance Committee strives to reflect current legal developments regarding diversity on public company boards, and to nominate directors with a variety of complementary skills and experience. Accordingly, the Nominating and Governance Committee endeavors for the Board, as a group, to possess the appropriate talent, skills and experience to oversee our business.

The Nominating and Governance Committee generally uses the following processes for identifying and evaluating nominees for director:

- In the case of incumbent directors, the Nominating and Governance Committee reviews the director's overall service to Amyris during such director's term, including performance, effectiveness, participation and independence.

- In seeking to identify new director candidates, the Nominating and Governance Committee may use its network of contacts, or the network of contacts of our Chief Executive Officers, to compile a list of potential candidates and may also engage, if deemed appropriate, a professional search firm. The Nominating and Governance Committee would conduct any appropriate and necessary inquiries into the backgrounds and qualifications of possible candidates after considering the structure and needs of the Board. The Nominating and Governance Committee would then meet with our Chief Executive Officer to discuss and consider the candidates' qualifications in order to select nominees for recommendation to the Board by majority vote.

The Nominating and Governance Committee will consider director candidates recommended by stockholders and will use the same criteria to evaluate all candidates. We have not received a recommendation for a director nominee for the 2020 annual meeting from a stockholder or stockholders. Stockholders who wish to recommend individuals for consideration by the Nominating and Governance Committee to become nominees for election to the Board may do so by delivering a written recommendation to the Nominating and Governance Committee at the following address: Chair of the Nominating and Governance Committee c/o Secretary of Amyris, Inc. at 5885 Hollis Street, Suite 100, Emeryville, California 94608, at least 120 days prior to the anniversary date of the mailing of our Proxy Statement for the last annual meeting of stockholders, which for our 2021 annual meeting of stockholders is a deadline of December 18, 2020. You are also advised to review our Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations. Submissions must include the full name of the proposed nominee, a description of the proposed nominee's business experience and directorships for at least the previous five years, complete biographical information, a description of the proposed nominee's qualifications as a director and a representation that the nominating stockholder is a beneficial or record owner of our common stock. Any such submission must be accompanied by the written consent of the proposed nominee to be named as a nominee and to serve as a director if elected.

***Stockholder Nominations***

Stockholders who wish to nominate persons directly for election to the Board at an annual meeting of stockholders must meet the deadlines and other requirements set forth in our Bylaws and the rules and regulations of the SEC. As provided in our certificate of incorporation, subject to the rights of the holders of any series of preferred stock, any vacancy occurring in the Board can generally be filled only by the affirmative vote of a majority of the directors then in office. The director appointed to fill the vacancy will hold office for a term expiring at the annual meeting of stockholders at which the term of office of the class to which the director has been assigned expires and until such director's successor shall have been duly elected and qualified, or until such director's earlier death, resignation or removal.

**Stockholder Communications with Directors**

The Board has established a process by which stockholders may communicate with the Board or any of its members, including the Chair of the Board, or to the independent directors generally. Stockholders and other interested parties who wish to communicate with the Board or any of the directors may do so by sending written communications addressed to the Secretary of Amyris at 5885 Hollis Street, Suite 100, Emeryville, California 94608. The Board has directed that all communications will be compiled by the Secretary and submitted to the Board or the selected group of directors or individual directors on a periodic basis. These communications will be reviewed by our Secretary, who will determine whether they should be presented to the Board. The purpose of this screening is to allow the Board to avoid having to consider irrelevant or inappropriate communications (such as advertisements and solicitations). The screening procedure has been approved by a majority of the non-management directors of the Board. Directors may at any time request that we forward to them immediately all communications received by us for the Board. All communications directed to the Audit Committee in accordance with the procedures described above that relate to accounting, internal accounting controls or auditing matters involving Amyris will be promptly and directly forwarded to all members of the Audit Committee.

## Proposal 2 —
## Ratification of Appointment of Independent Registered Public Accounting Firm

### General

On March 9, 2020, the Audit Committee appointed Macias Gini & O'Connell LLP ("MGO") as our independent registered public accounting firm for the fiscal year ending December 31, 2020, and the Board has directed that management submit the appointment of such independent registered public accounting firm for ratification by our stockholders at the annual meeting. MGO has been engaged as our independent registered public accounting firm since July 2019. We expect representatives of MGO to be present at the annual meeting. They will have an opportunity to make a statement if they so desire and will be available to respond to appropriate questions.

Neither our Bylaws nor other governing documents or applicable law require stockholder ratification of the appointment of our independent registered public accounting firm. However, we are submitting the appointment of MGO to our stockholders for ratification as a matter of good corporate practice. If our stockholders fail to ratify the appointment, the Audit Committee will reconsider whether or not to retain MGO. Even if the appointment is ratified, the Audit Committee in its discretion may direct the appointment of a different independent registered public accounting firm at any time during the year if they determine that such a change would be in the best interests of Amyris and our stockholders.

### Background

On May 15, 2019, we determined, with the approval of the Audit Committee and the Board, to appoint BDO USA, LLP ("BDO") to serve as our independent registered public accounting firm for the fiscal year ending December 31, 2019, and to dismiss KPMG LLP ("KPMG") upon completion of its audit of our consolidated financial statement as of and for the year ended December 31, 2018 and the effectiveness of internal control over financial reporting as of December 31, 2018, and the issuance of its reports thereon as well as the re-audit of the consolidated financial statements as of and for the year ended December 31, 2017. Subsequently, On July 3, 2019, (i) BDO resigned as our independent registered public accounting firm for the fiscal year ending December 31, 2019, prior to performing any substantive work with respect to the audit work for that year, and (ii) we determined, with the approval of the Audit Committee, to: (A) dismiss KPMG as our independent registered public accounting firm for the fiscal years ended December 31, 2018 and 2017, (B) appoint MGO as our independent registered public accounting firm for the fiscal years ended December 31, 2019 and 2018, and (C) appoint BDO as our independent registered public accounting firm for the re-audit of our consolidated financial statements for the fiscal year ended December 31, 2017. On July 9, 2019, MGO was formally engaged as our independent registered public accounting firm for the fiscal years ended December 31, 2019 and 2018. On July 10, 2019, BDO was formally engaged as our independent registered public accounting firm for the re-audit of our consolidated financial statements for the fiscal year ended December 31, 2017. The Audit Committee authorized KPMG to respond fully to all inquiries from BDO and MGO, and BDO to respond fully to all inquiries from MGO.

The audit report of KPMG on our consolidated financial statements as of and for the year ended December 31, 2017 did not contain any adverse opinion or disclaimer of opinion, nor was it qualified or modified as to audit scope or accounting principles, except as follows: KPMG's report on our consolidated financial statements as of and for the year ended December 31, 2017 contained a separate paragraph stating that "The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses from operations and has current debt service requirements that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty."

On April 5, 2019 and May 14, 2019, the Audit Committee and the Board (upon the recommendation of the Audit Committee), respectively, after consultation with senior management and KPMG, concluded that our consolidated financial statements for the year ended December 31, 2017 and the quarterly and year-to-date periods ended March 31, 2018, June 30, 2018 and September 30, 2018, respectively, should be restated and should no longer be relied upon. Further, our disclosures related to such financial statements and related

communications issued by or on behalf of us with respect to such periods, including management's assessment of internal control over financial reporting as of December 31, 2017, should also no longer be relied upon. As of July 3, 2019, KPMG had not completed its audit procedures or issued any reports on our consolidated financial statements as of and for the year ended December 31, 2018 or our internal control over financial reporting and disclosure controls and procedures as of December 31, 2018. Other than the reportable events disclosed above, during our two most recent fiscal years ended December 31, 2019 and December 31, 2018, respectively, there were no "disagreements" or "reportable events," as such terms are described in Items 304(a)(1)(iv) and 304(a)(1)(v), respectively, of Regulation S-K and the related instructions thereto, with KPMG or BDO on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreement(s) or reportable event(s), if not resolved to the satisfaction of KPMG or BDO, as applicable, would have caused KPMG or BDO, as applicable, to make reference to the subject matter of the disagreement(s) or reportable event(s) in connection with its report on our consolidated financial statements for the relevant year.

During our two most recent fiscal years, which ended December 31, 2019 and December 31, 2018, neither we nor any person on our behalf consulted with MGO with respect to either (i) the application of accounting principles to a specified transaction, either completed or proposed, or the type of audit opinion that might be rendered on our consolidated financial statements, and neither a written report was provided to us nor oral advice was provided that MGO concluded was an important factor in reaching a decision as to any accounting, auditing or financial reporting issue; or (ii) any matter that was either the subject of a "disagreement" or a "reportable event," as such terms are described in Items 304(a)(1)(iv) and 304(a)(1)(v) of Regulation S-K.

**Vote Required and Board Recommendation**

Ratification of the appointment of Macias Gini & O'Connell LLP requires the affirmative vote of the holders of a majority of the shares of common stock properly casting votes for or against this proposal at the annual meeting in person or by proxy. Abstentions will not count toward the vote total for this proposal and therefore will not affect the outcome of this proposal. Shares represented by executed proxies that do not indicate a vote "For," "Against" or "Abstain" will be voted by the proxy holders "For" this proposal.

**The Board recommends a vote "FOR" this Proposal 2**

**Independent Registered Public Accounting Firm Fee Information**

MGO has served as our independent registered public accounting firm for the fiscal year ended December 31, 2018 and the fiscal year ending December 31, 2019 since July 9, 2019. The following tables set forth the aggregate fees billed or to be billed to us by MGO for services performed in or for the fiscal years ended December 31, 2019 and December 31, 2018 (in thousands):

| | Fiscal Year ended December 31, | |
|---|---|---|
| **Fee Category** | **2019** | **2018** |
| Audit Fees | $2,246.8 | $3,476.6 |
| Audit-Related Fees | — | — |
| Tax Fees | — | — |
| All Other Fees | — | — |
| Total Fees | $2,246.8 | $3,476.6 |

The "Audit Fees" category includes aggregate fees billed for the relevant fiscal year for professional services rendered for the audit of our annual financial statements and review of our unaudited financial statements included in our Quarterly Reports on Form 10-Q, and for services that are normally provided in connection with statutory and regulatory filings or engagements for those fiscal years.

The “Audit-Related Fees” category includes aggregate fees billed in the relevant fiscal year for assurance and related services that are reasonably related to the performance of the audit or review of our financial statements and that are not reported under the “Audit Fees” category. We did not incur any fees in this category with respect to MGO for the fiscal years ended December 31, 2019 and 2018.

The “Tax Fees” category includes aggregate fees billed in the relevant fiscal year for professional services rendered with respect to tax compliance, tax advice and tax planning. We did not incur any fees in this category with respect to MGO for the fiscal years ended December 31, 2019 and 2018.

The “All Other Fees” category includes aggregate fees billed in the relevant fiscal year for products and services other than those reported under the other categories described above. We did not incur any fees in this category with respect to MGO for the fiscal years ended December 31, 2019 and 2018.

**Audit Committee Pre-Approval of Services Performed by our Independent Registered Public Accounting Firm**

The Audit Committee’s charter requires it to approve all fees and other compensation paid to, and pre-approve all audit and non-audit related services provided by, the Company’s independent registered public accounting firm. The Audit Committee charter permits the Audit Committee to delegate pre-approval authority to one or more members of the Audit Committee, provided that any pre-approval decision is reported to the Audit Committee at its next scheduled meeting. The Audit Committee has delegated such pre-approval authority, for fees of up to $100,000 in the aggregate, to the Chair of the Audit Committee.

In determining whether to approve audit and non-audit services to be performed by our independent registered public accounting firm, the Audit Committee takes into consideration the fees to be paid for such services and whether such fees would affect the independence of the accounting firm in performing its audit function. In addition, when determining whether to approve non-audit services to be performed by our independent registered public accounting firm, the Audit Committee considers whether the performance of such services is compatible with maintaining the independence of the accounting firm in performing its audit function, and confirms that the non-audit services will not include the prohibited activities set forth in Section 201 of the Sarbanes-Oxley Act of 2002. Except for the services described above under “Audit-Related Fees,” “Tax Fees” and “All Other Fees” (each of which was pre-approved by the Audit Committee in accordance with its policy), no non-audit services were provided by our independent registered public accounting firm in 2019 or 2018.

All fees paid to, and all services provided by, our independent registered public accounting firm during fiscal years 2019 and 2018 were pre-approved by the Audit Committee in accordance with the pre-approval procedures described above.

## REPORT OF THE AUDIT COMMITTEE*

The Audit Committee has reviewed and discussed with management our audited consolidated financial statements for the fiscal year ended December 31, 2019. The Audit Committee has also discussed with MGO, our independent registered public accounting firm, the matters required to be discussed by Public Company Accounting Oversight Board Auditing Standard No. 1301 (Communications with Audit Committees), as amended.

The Audit Committee has received and reviewed the written disclosures and the letter from MGO required by applicable requirements of the Public Company Accounting Oversight Board regarding MGO’s communications with the Audit Committee concerning independence, and has discussed with MGO its independence.

* *The material in this report is not “soliciting material,” is not deemed “filed” with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Amyris under the Securities Act or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.*

Based on the review and discussions referred to above, the Audit Committee recommended to the Board that the audited consolidated financial statements be included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 for filing with the Securities and Exchange Commission.

**Amyris, Inc. Audit Committee of the Board**

R. Neil Williams (Chair)
Geoffrey Duyk
Steven Mills

## Proposal 3 —
## Non-Binding Advisory Vote on Compensation of Named Executive Officers

**General**

Pursuant to Section 14A of the Exchange Act, the stockholders of Amyris may cast an advisory and non-binding vote at the Annual Meeting in relation to the compensation of our named executive officers as disclosed in this Proxy Statement in accordance with SEC rules. Our practice, which was approved by our stockholders at the 2017 Annual Meeting, is to conduct this non-binding vote on a triennial basis. This vote is not intended to address any specific item of compensation, but rather the overall compensation of our named executive officers and the philosophy, policies and practices described in this Proxy Statement.

This proposal is set forth in the following resolution:

> "RESOLVED, that the stockholders of Amyris, Inc. approve, on an advisory basis, the compensation of its named executive officers, as disclosed in this Proxy Statement pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Executive Compensation, the compensation tables, and any related material disclosed in this Proxy Statement."

As an advisory vote, this proposal is non-binding. Although the vote is non-binding, the Board and the LDCC value the opinions of our stockholders, and will carefully consider the outcome of the vote when making future compensation decisions for our named executive officers.

As described more fully in "Executive Compensation" below, the Board and the LDCC believe that our compensation policies, which set forth clear and simple objectives, will yield the best results.

Our objectives are to:

- Attract, retain, and motivate highly talented employees that are key to our success;
- Reinforce our core values and foster a sense of ownership, urgency and entrepreneurial spirit;
- Link compensation to individual, team, and company performance (as appropriate by employee level);
- Emphasize performance-based compensation for individuals who can most directly impact stockholder value; and
- Provide exceptional pay for delivering exceptional results.

We believe that our executive compensation program is aligned with the long-term interests of our stockholders and that our compensation policies and practices provide an appropriate blend of compensation to retain our executives, reward them for performance in the short term and induce them to contribute to the creation of value in Amyris over the long term. We view the different components of our executive compensation program as distinct, each serving particular functions in furthering our compensation philosophy and objectives, and together providing a holistic approach to achieving such philosophy and objectives.

Our executive compensation program is designed to enable us to attract and retain the top executives and employees necessary to develop our business, while being prudent in the management of our cash and equity. Based on this approach, we continue to aim to balance and reward short-term and long-term performance with a total compensation package that includes a mix of both cash and equity. Our executive compensation program is intended to align the interests of management, key employees and stockholders and to encourage the creation of stockholder value by providing long-term incentives through equity ownership. The Executive Compensation section set forth on pages 50 – 67 of this Proxy Statement explain our compensation philosophy in greater detail. We urge you to read the Executive Compensation section of this Proxy Statement for additional details on our executive compensation program, including our compensation philosophy and objectives and the 2019 compensation of our named executive officers.

**Vote Required and Board Recommendation**

This proposal must receive a "For" vote from the holders of a majority of the shares of common stock properly casting votes on this proposal at the annual meeting in person or by proxy. If you own shares through a bank, broker or other Intermediary, you must instruct your bank, broker or other Intermediary how to vote in order for them to vote your shares so that your vote can be counted on this proposal. Abstentions and broker non-votes will not be counted toward the vote total for this proposal and therefore will not affect the outcome of this proposal.

**The Board recommends a vote "FOR" this Proposal 3**

## PROPOSAL 4 —
## APPROVAL OF OUR 2020 EQUITY INCENTIVE PLAN

**General**

We are asking our stockholders to approve our new 2020 Equity Incentive Plan (the "2020 Plan") to replace our 2010 Equity Incentive Plan (the "Prior Plan") and enable us to grant shares of our common stock reserved for issuance under the Plan after the expiration of the Prior Plan. Upon approval of the Plan by stockholders, the Prior Plan will terminate.

Our Board of Directors adopted the Plan on March 19, 2020, subject to approval by stockholders.

The 2020 Plan is intended to be the successor to our Prior Plan, which was adopted by the Board on June 21, 2010 and our stockholders on July 9, 2010 and became effective on September 27, 2010. In light of the expiration of our Prior Plan, the Board wishes to provide for a new equity incentive plan to ensure that shares of common stock continue to be available for the grant of equity awards (including stock options and restricted stock units) to our employees, officers and directors. Similar to the Prior Plan, the purpose of the 2020 Plan is to provide incentives to attract, retain and motivate persons whose present and potential contributions are important to the success of the company by offering them an opportunity to participate in the company's future performance through the grant of awards.

Approval of the 2020 Plan will allow us to continue to provide incentives to attract, retain and motivate eligible persons whose present and potential contributions are important to our success, by offering them an opportunity to participate in our future performance. We believe that the adoption of the 2020 Plan is in the best interests of the company because of the continuing need to provide stock options, restricted stock units and other equity-based incentives to attract and retain qualified personnel and to respond to relevant market changes in equity compensation practices. The use of equity compensation has historically been a significant part of our overall compensation philosophy and is a practice that we plan to continue. The 2020 Plan will serve as an important continuation of this practice and is a critical component of the overall compensation package that we offer to retain and motivate our employees. Awards under the 2020 Plan will create strong incentives for our employees to work hard for our future growth and success. If Proposal 4 is not approved by our stockholders, our Prior Plan will remain in effect, with only approximately two months remaining in its term. We believe our ability to attract and retain the talent we need to compete in our industry would be seriously and negatively impacted, and this could affect our long-term success.

A broad-based equity incentive plan focuses our employees who receive grants on achieving strong corporate performance, and we have embedded in our culture the necessity for employees to think and act as stockholders. We currently grant restricted stock units to the majority of our newly hired employees and to all of our executives and non-employee directors. This is an important component of our long-term employee incentive and retention plan and has been very effective in enabling us to attract and retain the talent critical for an innovative and growth-focused company. We also have granted, and in the future may grant, options, restricted stock units and shares of restricted stock, subject to time- and performance-based vesting, to certain employees on a targeted basis to incentivize retention and performance objectives. We firmly believe that a broad-based equity program is a necessary and powerful employee incentive and retention tool that benefits all of our stockholders.

Our headquarters is based in the San Francisco Bay Area where we must compete with many companies for a limited pool of talented people. The Board, the LDCC of the Board and company management all believe that equity compensation is essential to maintaining a balanced and competitive compensation program, has been integral to the company's success in the past and is vital to its ability to achieve strong performance in the future.

As of March 31, 2020, the Company has outstanding approximately 5,578,264 stock options to purchase common shares and 5,298,639 unvested restricted stock units. As of March 31, 2020, the Company's outstanding stock options have a weighted average per share exercise price of $10.03 and a weighted average remaining contractual term of 7.7 years. Accordingly, our approximately 10,876,903 outstanding stock option and restricted stock awards (not including awards under our employee stock purchase plan) plus 9,724,444

shares proposed to be available for future grant under our 2020 Plan (not including under our employee stock purchase plan) represent approximately 12.6% of our outstanding shares as of March 31, 2020.

Our named executive officers and directors have an interest in this proposal by virtue of their being eligible to receive equity awards under the 2020 Plan. However, none of these persons has been granted an award under the 2020 Plan. See "Awards to Officers and Directors" below for more information.

**Vote Required and Board Recommendation**

This proposal must receive a "For" vote from the holders of a majority of the shares of common stock properly casting votes on this proposal at the annual meeting in person or by proxy. If you own shares through a bank, broker or other Intermediary, you must instruct your bank, broker or other Intermediary how to vote in order for them to vote your shares so that your vote can be counted on this proposal. Abstentions and broker non-votes will not be counted toward the vote total for this proposal and therefore will not affect the outcome of this proposal.

**The Board recommends a vote "FOR" this Proposal 4**

**Description of the 2020 Equity Incentive Plan**

The following is a summary of the principal features of the 2020 Plan. This summary, however, does not purport to be a complete description of all of the provisions of the 2020 Plan. It is qualified in its entirety by reference to the full text of the 2020 Plan, a copy of which is attached hereto as **Appendix A**.

***Background***

The Board adopted the 2020 Plan on March 19, 2020, subject to our stockholder's approval at the 2020 annual meeting. The 2020 Plan will become effective on June 22, 2020, provided that the Plan is approved by the stockholders at the 2020 annual meeting ("Effective Date") and will terminate 10 years thereafter. The 2020 Plan provides for the grant of ISOs intended to qualify for favorable tax treatment under Section 422 of the U.S. Internal Revenue Code (the "Code") for their recipients, non-statutory stock options ("NSOs"), restricted stock awards, stock bonuses, stock appreciation rights, restricted stock units and performance awards, as described below.

***Administration***

The 2020 Plan is administered by the LDCC, all of the members of which are non-employee directors under applicable federal securities laws and outside directors (with respect to awards granted prior to November 2, 2017) as defined under applicable federal tax laws. The LDCC acts as the plan administrator and has the authority to construe and interpret the plan, grant awards, determine the terms and conditions of awards and make all other determinations necessary or advisable for the administration of the plan (subject to the limitations set forth in the 2020 Plan).

***Share Reserve***

The 2020 Plan initially reserves shares of our common stock for issuance in connection with stock options, restricted stock awards and other equity-based awards granted under such 2020 Plan, as follows:

- any reserved shares not issued or subject to outstanding grants under the Prior Plan on the Effective Date;
- shares that are subject to stock options or other awards granted under the Prior Plan that cease to be subject to such stock options or other awards by forfeiture or otherwise after the Effective Date;
- shares issued under the Prior Plan before or after the Effective Date pursuant to the exercise of stock options that are, after the Effective Date, forfeited;
- shares issued under the Prior Plan that are repurchased by the Company at the original issue price;
- shares that are subject to stock options or other awards under the Prior Plan that are used to pay the exercise price of an option or withheld to satisfy the tax withholding obligations related to any award;

- shares that are subject to issuance upon exercise of an option or stock appreciation right granted under the 2020 Plan but which cease to be subject to the option or stock appreciation right for any reason other than exercise of the option or stock appreciation right;
- shares that are subject to awards granted under the 2020 Plan that are forfeited or are repurchased by the Company at the original issue price;
- shares that are subject to awards granted under the 2020 Plan that otherwise terminate without such shares being issued; or
- shares that are surrendered pursuant to an exchange program.

To the extent an award under the 2020 Plan is paid out in cash rather than shares, such cash payment will not result in reducing the number of shares available for issuance under the 2020 Plan. Shares used to pay the exercise price of an award or withheld to satisfy the tax withholding obligations related to an award will become available for future grant or sale under the 2020 Plan. Shares that otherwise become available for grant and issuance shall not include shares subject to awards that initially became available because of the substitution clause in the 2020 Plan.

The number of shares available for grant and issuance under the 2020 Plan is subject to increase on January 1 for each of the calendar years during the term of the 2020 Plan by an amount equal to the lesser of (1) five percent of our shares outstanding on the immediately preceding December 31 and (2) a number of shares as may be determined by the Board in its discretion.

***Equity Awards***

The 2020 Plan will permit us to grant the following types of awards:

**Stock Options**. The 2020 Plan provides for the grant of ISOs and NSOs. ISOs may be granted only to our employees or employees of our subsidiaries and affiliates. NSOs may be granted to eligible employees, consultants and directors or any of our parent, subsidiaries or affiliates. We are able to issue no more than 30,000,000 shares pursuant to the grant of ISOs under the 2020 Plan. The LDCC determines the terms of each option award, provided that ISOs are subject to statutory limitations. The LDCC also determines the exercise price for a stock option, provided that the exercise price of an option may not be less than 100% (or 110% in the case of recipients of ISOs who hold more than 10% of our stock on the option grant date) of the fair market value of our common stock on the date of grant.

Options granted under the 2020 Plan vest at the rate specified by the LDCC and such vesting schedule is set forth in the stock option agreement to which such stock option grant relates. Generally, the LDCC determines the term of stock options granted under the 2020 Plan, up to a term of ten years (or five years in the case of ISOs granted to 10% stockholders).

After the option holder ceases to provide services to us, he or she is able to exercise his or her vested option for the period of time stated in the stock option agreement to which such option relates. Generally, if termination is due to death or disability, the vested option will remain exercisable for 12 months. If an option holder is terminated for cause (as defined in the 2020 Plan), then the option holder’s options will expire on the option holder’s termination date or at such later time and on such conditions as determined by the LDCC. In all other cases, the vested option will generally remain exercisable for three months. However, an option may not be exercised later than its expiration date.

**Restricted Stock Awards**. A restricted stock award is an offer by us to sell shares of our common stock subject to restrictions that the LDCC may impose. These restrictions may be based on completion of a specified period of service with us or upon the achievement of performance goals during a performance period. The LDCC determines the price of a restricted stock award. Unless otherwise set forth in the award agreement, vesting will cease on the date the participant no longer provides services to us, and at that time unvested shares will be forfeited to us or subject to repurchase by us.

**Stock Bonus Awards**. A stock bonus is an award of shares of our common stock for past or future services to us. Stock bonuses can be granted as additional compensation for performance and, therefore, are issued in exchange for cash. The LDCC determines the number of shares to be issued as stock bonus and any

restrictions on those shares. These restrictions may be based on completion of a specified period of service with us or upon the achievement of performance goals during a performance period. Unless otherwise set forth in the award agreement, vesting ceases on the date the participant no longer provides services to us, and at that time unvested shares will be forfeited to us or are subject to repurchase by us.

**Stock Appreciation Rights**. Stock appreciation rights provide for a payment, or payments, in cash or shares of our common stock to the holder based upon the difference between the fair market value of our common stock on the date of exercise and the stated exercise price of the stock appreciation right. Stock appreciation rights may vest based on time or achievement of performance goals.

**Restricted Stock Units**. Restricted stock units represent the right to receive shares of our common stock at a specified date in the future, subject to forfeiture of such right due to termination of employment or failure to achieve specified performance goals. If the restricted stock unit has not been forfeited, then on the date specified in the restricted stock unit agreement we will deliver to the holder of the restricted stock unit shares of our common stock, cash or a combination of our common stock and cash as specified in the applicable restricted stock unit agreement.

**Performance Awards**. A performance award is an award of a cash bonus or a bonus denominated in shares or units that is subject to performance factors. The award of performance shares may be settled in cash or by issuance of those shares (which may consist of restricted stock).

***Performance Criteria***

The LDCC may establish performance goals by selecting from one or more of the following performance criteria: profit before tax; sales; expenses; billings; revenue; net revenue; earnings (which may include earnings before interest and taxes, earnings before taxes, net earnings, stock-based compensation expenses, depreciation and amortization); operating income; operating margin; operating profit; controllable operating profit, or net operating profit; net profit; gross margin; operating expenses or operating expenses as a percentage of revenue; net income; earnings per share; total stockholder return; market share; return on assets or net assets; our stock price; growth in stockholder value relative to a pre-determined index; return on equity; return on invested capital; cash flow (including free cash flow or operating cash flows); balance of cash, cash equivalents and marketable securities, cash conversion cycle; economic value added; individual confidential business objectives; contract awards or backlog; overhead or other expense reduction; credit rating; completion of an identified special project; completion of a joint venture or other corporate transactions; strategic plan development and implementation; succession plan development and implementation; improvement in workforce diversity; employee satisfaction; employee retention; customer indicators and/or satisfaction; new product invention or innovation; research and development milestones; attainment of research and development milestones; improvements in productivity; bookings; working-capital targets and changes in working capital; attainment of operating goals and employee metrics; and any other metrics as determined by the LDCC. The LDCC may provide for one or more equitable adjustments to the performance criteria to preserve LDCC's original intent regarding such criteria at the time of the initial award grant, such as but not limited to, adjustments in recognition of unusual or non-recurring items such as acquisition related activities or changes in applicable accounting rules.

***Repricing Prohibited***

Repricing, or reducing the exercise price of outstanding options or stock appreciation rights, is prohibited without stockholder approval under the 2020 Plan. Such prohibited repricing includes substituting, or exchanging outstanding options or stock appreciation rights in exchange for cash, other awards or options or stock appreciation rights with an exercise price that is less than the exercise price of the original options or stock appreciation rights, unless approved by stockholders.

***Change in Control***

If we undergo a Corporate Transaction (as defined in the 2020 Plan), the 2020 Plan provides that the successor company (if not Amyris, in which case all outstanding awards will continue) may assume, convert, replace or substitute outstanding awards for substantially equivalent awards. Outstanding awards that are not

so assumed, converted, replaced or substituted will become fully vested and exercisable, as applicable, immediately prior to the consummation of the Corporate Transaction (unless otherwise set forth in the applicable award agreement).

***Transferability of Awards***

Unless the LDCC provides otherwise, the 2020 Plan does not allow for the transfer of awards, other than by will or the laws of descent and distribution, and generally only the recipient of an award may exercise it during his or her lifetime.

***Eligibility***

The individuals eligible to participate in the 2020 Plan include employees, officers, directors, consultants, independent contractors and advisors of Amyris or any parent, subsidiary or affiliate of ours, provided the consultants, independent contractors, advisors and directors render bona fide services not in connection with the offer and sale of securities in a capital-raising transaction.

***Payment for Purchase of Shares of our Common Stock***

Payment for shares of our common stock purchased pursuant to the 2020 Plan may be made in cash or by check or, where approved by the LDCC and where permitted by law (and to the extent not otherwise set forth in the applicable award agreement): (1) by cancellation of indebtedness; (2) by surrender of shares; (3) by waiver of compensation due or accrued for services rendered; (4) through a broker-assisted sale or other cashless exercise program; (5) by any combination of the foregoing; or (6) by any other method permitted by law and approved by the LDCC.

***Limit on Awards***

Under the Amended 2020 Plan, during any calendar year, no participant is eligible to receive more than 4,000,000 shares of our common stock pursuant to the grant of awards.

***Grants to Non-Employee Directors***

Grants to non-employee directors are eligible to receive any type of award offered under the 2020 Plan except ISOs. No non-employee director may receive awards under the 2020 Plan that, when combined with cash compensation received for service as a non-employee director, exceeds $500,000 in value (as described below) in any calendar year. Awards under the 2020 Plan may be granted to non-employee directors may be automatically made pursuant to a policy adopted by the Board, or made from time to time as determined in the discretion of the Board.

***Amendment and Termination***

The Board is permitted to amend or terminate the 2020 Plan at any time, subject to stockholder approval where required. Unless terminated earlier in accordance with its terms and if approved by the shareholders at the 2020 annual meeting, the 2020 Plan will terminate ten years from May 29, 2019.

***New Plan Benefits***

Members of our Board and our named executive officers have an interest in this proposal because they are eligible to receive awards under the 2020 Plan. Please refer to the "Executive Compensation" and "Director Compensation" sections of this Proxy Statement for additional information regarding the awards granted to our named executive officers and directors under the Prior Plan.

The following table shows, in the aggregate, the dollar value of shares subject to stock options or restricted stock units that will be granted, subject to Board approval, under our existing director equity grant program in fiscal year 2020 to our non-employee directors, under the 2020 Plan if Proposal 4 is approved by the stockholders.

| Name and Position | Dollar Value | Number of Shares of Stock or Units (#) |
|---|---|---|
| Non-Employee Director Group (10 persons) | $167,806[1] | 64,620 |

(1) The dollar value of restricted stock units granted annually to non-employee directors under our existing director equity grant program is calculated using the average daily closing price of our common stock as reported by Nasdaq during March 2020.

Future awards under the 2020 Plan to executive officers, employees or other eligible participants, and any additional future discretionary awards to non-employee directors in addition to those granted pursuant to the grant formula described above, are discretionary and cannot be determined at this time. We therefore have not included any such awards in the table above.

### U.S. Federal Income Tax Consequences

The information set forth below is only a summary and does not purport to be complete. The information is based upon current federal income tax rules and therefore is subject to change when those rules change. Only U.S. federal income tax consequences are addressed, and no state, local, or non-U.S. tax consequences of the 2020 Plan are discussed. Because the tax consequences to any participant may depend on his or her particular situation, each participant should consult his or her tax adviser regarding the federal, state, local, and other tax consequences of the grant or exercise of an award or the disposition of stock acquired under an award. The 2020 Plan is not qualified under the provisions of Section 401(a) of the Code and is not subject to any of the provisions of the Employee Retirement Income Security Act of 1974. Our ability to realize the benefit of any tax deductions described below depends on our generation of taxable income and the recognition of the deductions are subject to the requirement that the amounts constitute an ordinary and necessary business expense for us and are reasonable in amount, the limitation on the deduction of executive compensation under Section 162(m) of the Code (“Section 162(m)”), and the timely satisfaction of our tax reporting obligations.

#### *Non-statutory Stock Options*

Generally, there is no taxation upon the grant of an NSO. On exercise, an option holder will recognize ordinary income equal to the excess, if any, of the fair market value on the date of exercise of the stock option over the exercise price. If the option holder is or has been employed by us or one of our affiliates, that income will be subject to withholding taxes. The option holder’s tax basis in those shares will be equal to their fair market value on the date of exercise of the stock option, and the option holder’s capital gain holding period for those shares will begin on that date.

Subject to the requirement of reasonableness, the provisions of Section 162(m) and the satisfaction of our tax reporting obligations, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the option holder.

#### *Incentive Stock Options*

The 2020 Plan provides for the grant of stock options that qualify as incentive stock options, as defined in Section 422 of the Code. Under the Code, an option holder generally is not subject to ordinary income tax upon the grant or exercise of an ISO. If the option holder holds a share of common stock received on exercise of an ISO for more than two years from the date the stock option was granted and more than one year from the date the stock option was exercised (the “required holding period”), the difference, if any, between the amount realized on a sale or other taxable disposition of that share of common stock and the holder’s tax basis in that share will be long-term capital gain or loss.

If, however, an option holder disposes of a share of common stock received on exercise of an ISO before the end of the required holding period (a “disqualifying disposition”), the option holder generally will recognize ordinary income in the year of the disqualifying disposition equal to the excess, if any, of the fair market value of the share of common stock on the date the ISO was exercised over the exercise price. However, if the sales proceeds are less than the fair market value of the share of common stock on the date of exercise of the stock option, the amount of ordinary income recognized by the option holder will not exceed the gain, if any, recognized on the sale. If the amount realized on a disqualifying disposition exceeds the fair market value of the share of common stock on the date of exercise of the stock option, that excess will be short-term or long-term capital gain, depending on whether the holding period for the share exceeds one year. We are not required to withhold taxes for the ordinary income arising from a disqualifying disposition.

The amount by which the fair market value of a share of stock received on exercise of an ISO exceeds the exercise price of that stock option generally will be an adjustment included in the option holder’s alternative minimum taxable income for the year in which the stock option is exercised. If, however, there is a disqualifying disposition of the share of common stock in the year in which the stock option is exercised, there will be no adjustment for alternative minimum tax purposes with respect to that share. In computing alternative minimum taxable income, the tax basis of a share received on exercise of an ISO is increased by the amount of the adjustment with respect to that share of common stock for alternative minimum tax purposes in the year the stock option is exercised.

We are not allowed an income tax deduction with respect to the grant or exercise of an ISO or the disposition of a share of common stock received on exercise of an ISO that is disposed of after the required holding period. If there is a disqualifying disposition of a share of common stock, however, we are allowed a deduction in an amount equal to the ordinary income includible in income by the option holder, subject to the requirement of reasonableness, the provisions of Section 162(m) and the satisfaction of our tax reporting obligations.

***Restricted Stock Unit Awards***

Generally, a participant that is granted restricted stock units that are structured to comply with the requirements of Section 409A of the Code or an exemption from Section 409A will recognize ordinary income at the time the stock is delivered equal to the excess, if any, of the fair market value of the shares of our common stock received over any amount paid by the participant in exchange for the shares. Such income generally will be subject to withholding taxes.

To comply with the requirements of Section 409A of the Code, the shares of our common stock underlying restricted stock units may generally be delivered only upon one of the following events: a fixed calendar date (or dates), the participant’s separation from service, death or disability, or a change in control. If delivery occurs on another date, unless the restricted stock units otherwise comply with or qualify for an exemption from the requirements of Section 409A of the Code, the participant will owe a 20% federal tax plus interest on any taxes owed, in addition to the ordinary income tax described above.

The participant’s basis for determining gain or loss upon the disposition of shares received under restricted stock units will be the amount paid for such shares plus any ordinary income recognized when the shares of common stock are delivered.

Subject to the requirement of reasonableness, the provisions of Section 162(m) and the satisfaction of our tax reporting obligations, we will generally be entitled to a tax deduction equal to the taxable ordinary income recognized by the participant.

***Restricted Stock Awards***

Generally, a participant will recognize ordinary income at the time restricted stock is received equal to the excess, if any, of the fair market value of the stock received over any amount paid by the participant in exchange for the stock. If, however, the stock is not vested when it is received (e.g., the participant is required to work for us for a period of time to transfer or sell the stock), the participant generally will not recognize income until the stock vests, at which time the participant will recognize ordinary income equal to the excess, if any, of the fair market value of the stock on the date it vests over any amount paid by the participant in

exchange for the stock. A participant may, however, file an election with the Internal Revenue Service within 30 days following his or her receipt of the restricted stock to recognize ordinary income as of the date the participant receives the restricted stock equal to the excess, if any, of the fair market value of the restricted stock on the date the stock is granted over any amount paid by the participant for the stock.

The participant's basis for the determining gain or loss upon the subsequent disposition of restricted stock will be the amount paid for such shares plus any ordinary income recognized either when the restricted stock is received or when it vests.

Subject to the requirement of reasonableness, the provisions of Section 162(m) and the satisfaction of our tax reporting obligations, we will generally be entitled to a tax deduction equal to the taxable ordinary income recognized by the participant.

***Stock Appreciation Rights***

Generally, there is no taxation upon the grant of a stock appreciation right. On exercise, a participant will recognize ordinary income equal to the fair market value of the stock or cash received upon such exercise.

Subject to the requirement of reasonableness, the provisions of Section 162(m) and the satisfaction of our tax reporting obligations, we will generally be entitled to a tax deduction equal to the taxable ordinary income recognized by the participant.

***Section 162 Limitations on Tax Deductibility of Compensation Expense***

Section 162(m) generally limits the amount a public company can deduct in any one year for compensation paid to certain executive officers in excess of $1 million. As a result, any compensation paid to certain of our executive officers in excess of $1 million will be non-deductible unless it qualifies for transition relief afforded to compensation payable pursuant to certain binding arrangements in effect on November 2, 2017. We believe that compensation expense incurred in respect of our stock options granted prior to November 2, 2017, and restricted stock units granted prior to April 1, 2015, will continue to be deductible pursuant to this transition rule.

The LDCC continues to seek to balance the cost and benefit of tax deductibility with our executive compensation goals designed to promote long-term stockholder interests, and reserves discretion to approve or modify equity grants under the 2020 Plan that are non-deductible when it believes that such payments are appropriate to attract and retain executive talent. Accordingly, we expect that a portion of our future equity awards to executive officers will not be deductible.

## Proposal 5 —

## Approval of the issuance of shares of our common stock in accordance with Nasdaq Listing Standard Rule 5635(d): (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by such Nasdaq rule

### General

We are asking stockholders to approve the issuance of shares of our common stock (i) upon our election, and at our discretion, to pay interest and amortization on our Senior Convertible Notes due 2022 in shares of our common stock, and (ii) upon exercise of the rights and warrants issued in connection thereto, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the limitation imposed by Nasdaq Rule 5635(d).

***Exchange Agreement***

On December 30, 2019, Amyris, Inc. (the "Company") entered into a separate Exchange Agreements (the "Exchange Agreements") with certain non-affiliated investors (the "Investors"), pursuant to which the Investors would exchange the senior convertible notes issued to the Investors on November 15, 2019 (the "Exchange Notes"), in an aggregate principal amount of $66.0 million for (i) new senior convertible notes with an aggregate principal amount of $51.0 million (the "New Notes"), which New Notes are convertible into shares of our common stock, par value $0.0001 per share, as described below, (ii) an aggregate of 2,742,160 shares of our common stock (the "Exchange Shares"), (iii) rights (the "Rights") to acquire up to an aggregate of 2,484,321 shares of our common stock, (iv) warrants (the "Warrants") to purchase up to an aggregate of 3,000,000 shares of our common stock (the "Warrant Shares") at an exercise price of $3.25 per share, with an exercise term of two years from issuance, (v) accrued and unpaid interest on the Exchange Notes and (vi) cash fees in an aggregate amount of $1.0 million (collectively, the "Exchange"). The consummation of the Exchange (the "Closing") occurred on January 14, 2020.

The Exchange Agreements include customary representations, warranties and covenants of the parties. In addition, the Exchange Agreements prohibit the Company, subject to certain exceptions, from (i) disposing of any shares of common stock or securities convertible into or exchangeable for shares of common stock during the period commencing on the date of the Exchange Agreements and continuing through the date that is 90 days after the Closing and (ii) effecting or entering into an agreement to effect any transaction in which the Company (A) issues or sells any securities convertible into or exchangeable for shares of common stock at a conversion, exercise or exchange price that is based upon or varies with the price of the Company's common stock or with a conversion, exercise or exchange price that is subject to being reset at some future date, or (B) may sell securities at a future determined price, for so long as the New Notes remain outstanding.

***New Notes***

The New Notes are general unsecured obligations of the Company, and will mature on September 30, 2022 unless earlier converted, repaid or redeemed.

The New Notes are convertible from time to time, at the election of the holders, into shares of common stock at an initial conversion price of $5.00 per share (the "Conversion Price"). The Conversion Price is subject to adjustment in the event of any stock split, reverse stock split, recapitalization, reorganization or similar transaction.

The New Notes are payable in monthly installments beginning February 1, 2020 (each, an "Installment Date"), in an aggregate amount of $2,970,000 per month with respect to Installment Dates up to and including July 1, 2019 and in an aggregate amount of $3,432,000 per month thereafter, in either cash or, at the Company's option, subject to the satisfaction of certain equity conditions (the "Equity Conditions"), in shares of common stock at a price equal to the lesser of (x) 88% of the lesser of (A) the daily volume-weighted average price ("VWAP") of our common stock on the applicable payment date and (B) the average of the lowest two daily VWAPs of our common stock during the 10 trading day period ending on the applicable payment date and (y) the Conversion Price, subject to a price floor (the "Floor Price") of $0.80 (the "Installment Conversion

Price"). Each installment payment will reduce the principal amount under the New Notes by 90.9% of the amount of such installment payment.

The New Notes will bear interest at a rate of 5% per annum, payable on each Installment Date. Interest on the New Notes may be paid in either cash or, at the Company's option, subject to the satisfaction of the Equity Conditions, shares of Common Stock at the Installment Conversion Price. Upon the occurrence and during the continuation of an event of default, interest on the New Notes will accrue at a rate of 15% per annum.

In the event that the number of shares of common stock issuable to the holder on the applicable payment date is reduced as a result of the Floor Price, the Company shall also pay to the holder an amount in cash equal to the product of (i) the number of shares by which the payment was reduced as a result of the Floor Price, multiplied by (ii) the Installment Conversion Price. The holders will have the right, upon notice to the Company, to defer all or any portion of any installment amount to a future Installment Date.

The Company may at its option redeem the New Notes, in full, at a price equal to 115% of the greater of (A) the principal amount of the New Notes being redeemed and (B) the intrinsic value of the shares of common stock underlying the principal amount of the New Notes being redeemed, based on the greater of (i) the highest daily VWAP of our common stock occurring during the 30 trading day period ending on the trading day immediately before the related redemption date and (ii) the highest average daily VWAP of our common stock over any 5 trading day period occurring during the 30 consecutive trading day period beginning on the related redemption date. In addition, the Company is required to redeem the New Notes in an aggregate amount of $10.0 million following the receipt by the Company of at least $80.0 million of aggregate net cash proceeds from one or more financing transactions at a price of 107% of the amount being redeemed, unless such redemption is deferred by the holder.

The New Notes contain customary terms and covenants, including (i) a restriction on the Company's ability to incur additional indebtedness, (ii) covenants related to minimum revenue, liquidity, financing activity and the conversion or exchange of existing indebtedness into equity, (iii) certain events of default, after which the holders may (A) require the Company to redeem all or any portion of their New Notes in cash at a price equal to 115% of the amount being redeemed and (B) convert all or any portion of their New Notes at a price equal to the lesser of (x) 75% of the lowest daily VWAP of our common stock during the 10 trading day period ending on the applicable conversion date and (y) the Conversion Price, subject to the Floor Price (the "Event of Default Conversion Price") and (iv) in the event that (A) the daily VWAP of our common stock over any 3 consecutive trading days is less than $2.25, (B) the daily VWAP of our common stock is less than $1.75, or (C) the daily dollar trading volume of our common stock is less than $500,000 for 3 consecutive trading days, the holders may convert all or any portion of their New Notes at the Event of Default Conversion Price until such date thereafter upon which the daily VWAP of our common stock over any 10 trading day period is at least $2.25.

In the event the Company undergoes a change in control, the Company's stockholders approve any plan or proposal for the liquidation or dissolution of the Company, or the Company's common stock ceases to be listed on a national securities exchange (a "Fundamental Change"), holders of the New Notes may (i) require the Company to redeem all or any portion of their New Notes in cash at a price equal to 115% of the greater of (A) the principal amount of the New Notes being redeemed and (B) the intrinsic value of the shares of common stock underlying the principal amount of the New Notes being redeemed, based on the average of the 3 highest daily VWAPs of our common stock occurring during the 30 trading day period ending on the trading day immediately preceding such Fundamental Change (the "Fundamental Change Repurchase Price") and (ii) require the Company to redeem all or any portion of the Fundamental Change Repurchase Price in shares of common stock at a price equal to the lesser of (x) 88% of the lesser of (A) the daily VWAP of our common stock on the trading day immediately preceding the applicable redemption date and (B) the average of the lowest two daily VWAPs of our common stock during the 10 trading day period ending on the trading day immediately preceding the applicable redemption date and (y) the Conversion Price, subject to the Floor Price.

Notwithstanding the foregoing, the holders will not have the right to convert any portion of a New Note, and the Company will not have the option to pay any amount under the New Notes in shares of Common Stock, if (a) the holder, together with its affiliates, would beneficially own in excess of 4.99% (or such

other percentage as determined by the holder and notified to the Company in writing, not to exceed 9.99%, provided that any increase of such percentage will not be effective until 61 days after notice thereof) of the number of shares of the Company's common stock outstanding immediately after giving effect to such conversion or payment, as applicable (the "Ownership Limitation") or (b) the aggregate number of shares issued with respect to the New Notes (and any other transaction aggregated for such purpose) after giving effect to such conversion or payment, as applicable, would exceed 17,202,404 shares of common stock (the "Exchange Cap"), unless Stockholder Approval (as defined below) has been obtained. In the event that (i) the Company is prohibited from issuing any shares of common stock under the New Notes as a result of the Ownership Limitation (other than in connection with a conversion of New Notes), the related principal amount of the New Notes shall be deferred to a future Installment Date as determined by the holder, and (ii) after January 31, 2020, the Company is prohibited from issuing shares of common stock upon conversion of the New Notes as a result of the Exchange Cap, the Company shall pay cash in lieu of any shares that would otherwise be deliverable upon a conversion of the New Notes in excess of the Exchange Cap based on the daily VWAP of our common stock on the applicable conversion date.

***Warrants***

The exercise price of the Warrants is subject to standard adjustments but does not contain any anti-dilution protection, and the Warrants only permit "cashless" or "net" exercise to the extent that there is not an effective registration statement covering the resale of the applicable Warrant Shares. In addition, the Investors may not exercise the Warrants, and the Company may not effect any exercise of the Warrants, to the extent that, (i) after giving effect to such exercise, the applicable Investor, together with its affiliates, would beneficially own in excess of 4.99% (or such other percentage as determined by the Investor and notified to the Company in writing, not to exceed 9.99%, provided that any increase of such percentage will not be effective until 61 days after notice thereof) of the number of shares of common stock outstanding after giving effect to such exercise or (ii) the aggregate number of shares issued with respect to the Warrants, the New Notes, the Rights and any other transaction aggregated for such purpose, including the issuance of the Exchange Shares, after giving effect to such exercise, would exceed the Exchange Cap, unless the Stockholder Approval has been obtained. In the event that after January 31, 2020 the Company is prohibited from issuing shares of common stock upon exercise of the Warrants as a result of the Exchange Cap, the Company shall pay cash in lieu of any shares that would otherwise be deliverable upon an exercise of the Warrants in excess of the Exchange Cap.

***Rights***

The Investors may not exercise the Rights, and the Company may not effect any exercise of the Rights, to the extent that, (i) after giving effect to such exercise, the applicable Investor, together with its affiliates, would beneficially own in excess of 4.99% (or such other percentage as determined by the Investor and notified to the Company in writing, not to exceed 9.99%, provided that any increase of such percentage will not be effective until 61 days after notice thereof) of the number of shares of common stock outstanding after giving effect to such exercise or (ii) the aggregate number of shares issued with respect to the Rights, the New Notes, the Warrants and any other transaction aggregated for such purpose, including the issuance of the Exchange Shares, after giving effect to such exercise, would exceed the Exchange Cap, unless the Stockholder Approval has been obtained. In the event that after January 31, 2020 the Company is prohibited from issuing shares of common stock upon exercise of the Rights as a result of the Exchange Cap, the Company shall pay cash in lieu of any shares that would otherwise be deliverable upon an exercise of the Rights in excess of the Exchange Cap.

The Exchange Shares, the New Notes, the Rights and the Warrants (including the shares of common stock underlying the New Notes, the Rights and the Warrants) were issued in a private exchange pursuant to the exemption from registration under Section 3(a)(9) of the Securities Act of 1933, as amended.

***Waiver and Forbearance Agreement***

On February 18, 2020, the Company and the Holders entered into separate waiver and forbearance agreements, (the "W&F Agreements"), pursuant to which the Holders agreed to, for 60 days following the date of the W&F Agreement, except in case of early termination of the W&F Agreement or, solely with

respect to the Stockholder Approval (as defined below) if the other defaults described below have been cured on or prior to the date that is 60 days following the date of the W&F Agreement, until May 31, 2020 (the "W&F Period"), and in each case subject to certain conditions to effectiveness contained in the W&F Agreement, (i) forbear from exercising certain of their rights and remedies with respect to certain defaults by the Company, and (ii) waive any event of default for (A) violations of the minimum liquidity covenant since December 31, 2019 and (B) failure to obtain the Stockholder Approval prior to March 15, 2020.

In addition, pursuant to the W&F Agreements, the Company and the Holders agreed that (i) the New Note amortization payment due on March 1, 2020 (the Amortization Payment) would be in the aggregate amount of $10.0 million (split proportionally among the Holders) and that the Company would elect to pay such amortization payment in shares of Common Stock in accordance with the terms of the New Note, provided however, that: (A) the Amortization Stock Payment Price (as defined in the New Note) shall be $3.00, (B) the Amortization Share Payment Period (as defined in the New Note) with respect to the Amortization Payment will end on April 30, 2020 rather than March 31, 2020; and (C) in the event that Holder does not elect to receive the full Amortization Share Amount (as defined in the New Note) during such Amortization Share Payment Period, then the Amortization Payment shall be automatically reduced by the portion of such Amortization Payment not received by the Holder, (ii) there shall be no amortization payment due on April 1, 2020, and (iii) the amortization payment due on May 1, 2020 shall be in the aggregate amount of $8.9 million (split proportionally among the Holders).

***Stockholder Approval***

Pursuant to the Exchange Agreements, the New Notes and the W&F Agreements, the Company agreed to use commercially reasonable efforts to obtain from the Company's stockholders the approval contemplated by Nasdaq Listing Standard Rule 5635(d) with respect to the issuance of shares of common stock upon conversion of, or otherwise pursuant to, the New Notes in accordance with such rule, including without limitation the issuance of shares of common stock upon conversion of, or otherwise pursuant to, the New Notes in excess of the Exchange Cap (the "Stockholder Approval"), at an annual or special meeting of stockholders held on or prior to May 31, 2020. The Company is seeking the Stockholder Approval at the Annual Meeting and, as described in more detail below, the parties subject to the Voting Agreements (as defined below) have agreed to vote in favor of the Stockholder Approval. Pursuant to the Exchange Agreement, if the Company does not obtain the Stockholder Approval at the Annual Meeting, the Company will call a stockholder meeting every 90 days thereafter to seek the Stockholder Approval until the Stockholder Approval is obtained and use best efforts to obtain the Stockholder Approval at each such meeting.

***Voting Agreements***

In connection with the transactions contemplated by the Exchange Agreements, the Company entered into separate Voting Agreements (the "Voting Agreements") with Foris Ventures, LLC ("Foris") and affiliates of Vivo Capital LLC ("Vivo"), pursuant to which Foris and Vivo agreed to vote their shares of the Company's common stock in favor of the Stockholder Approval and to not sell or otherwise transfer or assign their shares of the Company's common stock (i) in the case of Foris, until May 14, 2020, and (ii) in the case of Vivo, until the earlier of the nine month anniversary of the date of its Voting Agreements and the date the Stockholder Approval is obtained. The stockholders that are party to the Voting Agreements beneficially owned and were entitled to vote approximately 36.5% of the Company's outstanding common stock as of the record date for the Annual Meeting.

**This summary of the terms of the Exchange Agreements, the New Notes, the Rights, the Warrants, the W&F Agreement and related agreements is qualified in its entirety by reference to our Current Reports on Form 8-K filed with the SEC on December 30, 2019, January 21, 2020 and February 19, 2020, including the exhibits filed therewith and the other documents incorporated by reference therein, which are incorporated herein by reference. You should read this summary together with such documents.**

**Vote Required and Board Recommendation**

This proposal must receive a "For" vote from the holders of a majority of the shares of common stock properly casting votes on this proposal at the annual meeting in person or by proxy. If you own shares through a bank, broker or other Intermediary, you must instruct your bank, broker or other Intermediary how to vote

in order for them to vote your shares so that your vote can be counted on this proposal. Abstentions and broker non-votes will not be counted toward the vote total for this proposal and therefore will not affect the outcome of this proposal.

**The Board recommends a vote "FOR" this Proposal 5.**

The Board determined that Proposal 5 is advisable and in the best interests of our stockholders and recommended that our stockholders vote in favor of Proposal 5.

In reaching its determination to approve Proposal 5, the Board, with advice from our management and legal advisors, considered a number of factors, including:

- that it is in the best interests of the Company and our stockholders that the Company have the flexibility to issue shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and amortization on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants, in each case, rather than being required to pay cash in lieu of any such issuances in excess of the Exchange Cap;
- that our management explored other options with other potential investors for refinancing the Exchange Notes and were not aware of an ability for us to refinance the Exchange Notes on better terms to the New Notes, or at all;
- it was the determination of the Board that the Exchange was an important event to strengthen our balance sheet;
- our financial condition, results of operations, cash flow and liquidity, including our outstanding debt obligations;
- that the investors in the 2022 Notes are not affiliates of the Company;
- that our stockholders who did not participate in the Exchange may be diluted and the value of our common stock may be diluted upon the issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants;
- that the conversion price of the New Notes on the date we entered into the Exchange Agreement was, effectively, given the conversion terms, including our ability to pay interest on the New Notes and make installment payments on the New Notes in shares of our common stock, at a discount to the market price of our common stock; and
- the fees and expenses to be incurred by us in connection with the Exchange.

In view of the variety of factors considered in connection with the evaluation of the issuance of the New Notes, the Exchange Shares, the Rights and the Warrants and the potential issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and/or Warrants, and the complexity of these matters, the Board did not find it practicable to, and did not, quantify or otherwise attempt to assign any relative weight to the various factors considered. In addition, in considering the various factors, individual members of the Board may have assigned different weights to different factors.

After evaluating these factors for and against the issuance of the New Notes, the Exchange Shares, the Rights and the Warrants and the potential issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants, and based upon their knowledge of our business, financial condition and prospects, potential financing alternatives (or lack thereof), and the views of our management, the Board concluded that the issuance of the New Notes, the Exchange Shares, the Rights and the Warrants and the potential issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights

and/or Warrants, is in our best interest and in the best interests of our stockholders, and recommends that all stockholders vote "FOR" the approval of Proposal 5.

**Purpose of Proposal 5 — Nasdaq Stockholder Approval Requirement**

Our common stock is listed on Nasdaq and trades under the ticker symbol AMRS. The rules governing companies with securities listed on Nasdaq require stockholder approval in connection with a transaction other than a public offering involving the sale or issuance by the company of common stock (or securities convertible into or exchangeable for common stock) equal to 20% or more of the company's common stock or 20% or more of the company's voting power outstanding before the issuance for a price that is less than the lower of: (i) the closing price of the common stock immediately preceding the signing of the binding agreement for the issuance of such securities; or (ii) the average closing price of the common stock for the five trading days immediately preceding the signing of the binding agreement for the issuance of such securities (the "Minimum Price"). This requirement is set forth in Nasdaq Marketplace Rule 5635(d). Based on Nasdaq Marketplace Rule 5635(d), the issuance of the New Notes, the Exchange Shares, the Rights and the Warrants and the potential issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants, may be deemed to involve the issuance of securities convertible into or exchangeable for more than 20% of our common stock at a discount to the Minimum Price.

We are requesting in this Proposal 5 that our stockholders approve the issuance of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and amortization on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants, in each case, in accordance with Nasdaq Marketplace Rule 5635(d). The issuance of shares of our common stock related thereto is intended to be exempt from the registration requirements of the Securities Act pursuant to Section 3(a)(9) of the Securities Act.

**Voting Agreements**

Under the terms of the voting agreements entered into between Amyris and each of Foris and Vivo, each stockholder who is a party to such agreements has agreed, subject to the terms and conditions set forth in the applicable voting agreement, to vote the shares of our common stock subject to such voting agreements for the approval of Proposal 5. As of the record date for the Annual Meeting, the parties to the voting agreements beneficially owned and were entitled to vote approximately 36.5% of the shares of our common stock outstanding.

**Potential Adverse Effects — Dilution and Impact of the Offering on Existing Stockholders**

The issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and amortization on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and/or Warrants, would have a dilutive effect on current stockholders who did not participate in the Exchange in that the percentage ownership of the Company held by such current stockholders would decline as a result of the issuance of common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and make installment payments on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants, and therefore our current stockholders who did not participate in the Exchange would have less ability to influence significant corporate decisions requiring stockholder approval. Therefore, any issuance of our common stock related thereto could have a dilutive effect on book value per share and any future earnings per share of our common stock. Dilution of equity interests could also cause prevailing market prices for our common stock to decline.

Due to potential adjustments to the number of shares of our common stock issuable upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and amortization on the New Notes in shares of our common stock, the exact magnitude of the potential dilutive effect of the issuance of shares of our common stock (i) upon conversion of the New Notes, upon our election, and at our discretion, to pay interest and amortization on the New Notes in shares of our common stock, and (ii) upon exercise of the Rights and Warrants cannot be conclusively determined. However, the dilutive effect may be material to current stockholders of the Company.

## Proposal 6 —
## Approval of amendment of Restated Certificate of Incorporation to increase the Total Number of Authorized Shares of Common Stock

### General

We are asking stockholders to approve an amendment (the "Amendment") to Article IV of our restated certificate of incorporation to increase the total number of our authorized shares from 255,000,000 to 355,000,000 and the number of authorized shares of common stock from 250,000,000 to 350,000,000 (the "Authorized Share Increase"). The Board has approved the advisability of and has adopted, subject to stockholder approval, the Amendment and the Authorized Share Increase. The Amendment requires approval of both the Board and our stockholders. Accordingly, we are seeking stockholder approval for the Amendment at the annual meeting of stockholders by means of this Proxy Statement. The form of the proposed Amendment is attached to this proxy statement as Appendix B and is incorporated herein by reference.

Article IV of our certificate of incorporation currently authorizes us to issue up to 255,000,000 shares of stock, with 250,000,000 designated as common stock and 5,000,000 designated as preferred stock. The additional common stock will have rights identical to our currently outstanding common stock. The number of authorized shares of our preferred stock will not be affected by this amendment; it will be maintained at 5,000,000 shares. No other changes are being proposed to our Certificate of Incorporation.

Our common stock consists of a single class, with equal voting, distribution, liquidation and other rights. As of April 3, 2020, of our 250,000,000 shares of authorized common stock, 163,891,920 shares were issued and outstanding and approximately 83 million shares were reserved for issuance under our current equity plans, outstanding convertible promissory notes, outstanding convertible preferred stock, and other outstanding rights to acquire common stock.

### Purpose of the Authorized Share Increase

The reason for the proposed amendment is to increase our financial flexibility following the issuance of the New Notes, Rights and Warrants under the Exchange (as described above), as well as the issuance of shares of common stock and rights under the 2020 Private Placement (as described below), and to facilitate our ability to continue implementing our employee equity programs at competitive levels. Our cash flow from operations has been, and continues to be, negative. We have reported in our recent quarterly and annual reports on Form 10-Q and 10-K that we need to raise additional operating capital. The Board may determine that the optimal manner for doing so is the sale of equity securities, instruments convertible into equity securities or options or rights to acquire equity securities. For example, since 2013 we have been engaging in financings involving the private placement of our common stock, convertible promissory notes or warrants.

The increase in authorized shares of common stock will give the Board the flexibility to undertake certain transactions to support our business operations, without the potential expense or delay associated with obtaining stockholder approval for any particular issuance. For example, we could issue additional shares of common stock in the future in connection with one or more of the following (subject to laws, regulations or Nasdaq rules that might require stockholder approval of certain transactions):

- financing transactions, such as public or private offerings of common stock or convertible securities;
- strategic investments;
- partnerships, collaborations and other similar transactions;
- debt or equity restructuring or refinancing transactions;
- acquisitions;
- stock splits or stock dividends; or
- any other proper corporate purposes.

The increase will also facilitate our ability to continue implementing our employee equity programs at competitive levels.

As of April 3, 2020, all of our currently authorized shares of common stock has either been issued or reserved for issuance under our equity incentive plans or upon exercise of outstanding warrants or conversion of outstanding convertible promissory notes, or needs to be reserved for issuance upon exercise of outstanding rights (as described below), after taking into consideration the full potential of interest that accrues and can convert to or be payable in shares of our common stock (including the shares of common stock to be issued subject to approval of Proposal 5). We do not currently have enough shares authorized to provide for compliance with our financing agreements nor to provide sufficient flexibility to pursue appropriate equity financing opportunities if they arise or to take certain other actions that the Board may determine are in our best interests and the best interests of our stockholders.

***2020 Private Placement***

On January 31, 2020 we entered into a Security Purchase Agreement (the "SPA") with certain accredited investors, including Foris Ventures, LLC ("Foris"), an entity affiliated with Director John Doerr and which beneficially owns more than 5% of our capital stock, for the issuance and sale of an aggregate of 8,710,802 shares of our common stock (the "PIPE Shares") and rights to purchase an aggregate of 8,710,802 shares of our common stock at a purchase price of $2.87 per share, for a period of 12 months from the closing (the "PIPE Rights"), for an aggregate purchase price of $25 million. Due to the limitation of our authorized shares of common stock, we agreed to seek, at our first annual meeting of stockholders following the closing of the SPA, an increase in the authorized shares available for issuance under our charter so that we could reserve a sufficient number of shares to provide for the issuance of the shares of our common stock upon the exercise of the PIPE Right by Foris, consisting of 5,226,481 shares of common stock, which PIPE Rights were exercised by Foris on March 11, 2020. Foris agreed to receive the PIPE shares after the Company obtains shareholder approval to increase its authorized capital stock.

**Vote Required and Board Recommendation**

This proposal must receive a "For" vote from the holders of a majority of our outstanding shares of common stock entitled to vote at the annual meeting, irrespective of the number of votes cast on the proposal at the meeting. If you own shares through a bank, broker or other Intermediary, you must instruct your bank, broker or other Intermediary how to vote in order for them to vote your shares so that your vote can be counted on this proposal. Abstentions and broker non-votes will have the same effect as an "Against" vote for this proposal.

**The Board recommends a vote "FOR" this Proposal 6.**

The Board believes it is desirable for us to have the flexibility to issue, without further stockholder action, additional shares of common stock in excess of the amount that is currently authorized. As is the case with the current authorized, unreserved, and unissued shares of common stock, the additional shares of common stock authorized by this proposed amendment could be issued upon approval by the Board without further vote of our stockholders except as may be required in particular cases by applicable law, regulatory agencies or Nasdaq rules. Such shares would be available for issuance from time to time as determined by the Board for any proper corporate purpose. Such purposes might include, without limitation, issuance in public or private sales for cash as a means of obtaining additional capital for use in our business and operations, issuance in repayment of indebtedness and/or issuance pursuant to stock plans relating to options, restricted stock, restricted stock units and other equity grants.

**Potential Adverse Effects**

If this proposal is adopted, the additional authorized shares of common stock can be issued or reserved with approval of the Board at times, in amounts, and upon terms that the Board may determine, without additional stockholder approval. Stockholder approval of this proposal will not, by itself, cause any change in our capital accounts. However, any future issuance of additional shares of authorized common stock, or securities convertible into common stock, would ultimately result in dilution of existing stockholders who do not participate in such transactions, and could also have a dilutive effect on book value per share and any future earnings per share. Dilution of equity interests could also cause prevailing market prices for our

common stock to decline. Current stockholders (other than those who are party to specific rights agreements with us, as described below) will not have preemptive rights to purchase additional shares.

In addition to dilution, the availability of additional shares of common stock for issuance could, under certain circumstances, discourage or make more difficult any efforts to obtain control of Amyris. For example, significant stock and convertible security issuances in connection with a series of private-placement financing efforts since 2012 have resulted in further concentration of ownership of Amyris by related parties. Such concentration of ownership could make it more difficult for an unrelated third party to undertake an acquisition of us. The Board is not aware of any actual or contemplated attempt to acquire control of Amyris and this proposal is not being presented with the intent that it be used to prevent or discourage any acquisition attempt. However, nothing would prevent the Board from taking any actions that it deems consistent with its fiduciary duties.

**Risks to Stockholders of Non-Approval**

Because our cash flow from operations has been negative, if the stockholders do not approve this proposal, the Board may be precluded from pursuing a wide range of potential corporate opportunities that might raise necessary cash or otherwise be in the best interests of Amyris and the best interests of our stockholders. This could have a material adverse effect on our business and prospects. We would also face substantial challenges in hiring and retaining employees at all levels, including our executive leadership team, in the near term.

**Interests of Certain Persons**

Our executive officers and directors have an interest in this proposal by virtue of their being eligible to receive equity awards under our Prior Plan, the 2020 Plan (subject to approval of Proposal 4), and any future equity incentive plan we adopt.

Some of our directors are affiliated with, or were appointed as directors by, entities that own convertible securities, rights and/or warrants that are convertible into or exercisable for shares of our common stock. Further, some of our directors are affiliated with, or were appointed as directors by, entities that may participate in future equity financings that will require issuance or reservation of shares authorized by the proposed amendment to our certificate of incorporation. The beneficial ownership of our directors and its affiliates is set forth in section "Security Ownership of Certain Beneficial Owners and Management" of this Proxy Statement.

Biolding Investment SA, DSM International B.V., Naxyris S.A., Sualk Capital Ltd, and Vivo Capital LLC, each of which has or recently had relationships to our directors, all hold a right of first investment that allows them to participate in specified future securities offerings (pro rata based on their percentage ownership of then-outstanding common stock).

The 2020 Private Placement was approved by the Operations and Finance Committee of the Board and ratified by the Board.

**Text of Proposed Amendment**

The text of the proposed amendment to our certificate of incorporation to effect the Authorized Share Increase is attached to this Proxy Statement as **Appendix B**. However, such text is subject to amendment to include such changes as may be required by the office of the Secretary of State of the State of Delaware or as the Board of Directors deems necessary and advisable to effect the Authorized Share Increase under this proposal.

## Corporate Governance Principles

The Board has adopted written Corporate Governance Principles to provide the Board and its committees with operating principles designed to enhance the effectiveness of the Board and its committees, to establish good Board and committee governance, and to establish the responsibilities of management and the Board in supporting the Board's activities. The Corporate Governance Principles set forth a framework for Amyris's governance practices, including composition of the Board, director nominee selection, Board membership criteria, director compensation, Board education, meeting responsibilities, access to information and employees, executive sessions of independent directors, standing Board committees and their functions, and responsibilities of management.

## Code of Business Conduct and Ethics

We have adopted a Code of Business Conduct and Ethics that applies to all directors, officers and employees of Amyris as required by Nasdaq governance rules. Our Code of Business Conduct and Ethics includes a section entitled "Code of Ethics for Chief Executive Officer and Senior Financial Officers," providing additional principles for ethical leadership and a requirement that such individuals foster a culture throughout Amyris that helps ensure the fair and timely reporting of our financial results and condition. Our Code of Business Conduct and Ethics is available on the corporate governance section of our website at http://investors.amyris.com/corporate-governance.cfm. Stockholders may also obtain a printed copy of our Code of Business Conduct and Ethics and our Corporate Governance Principles by writing to the Secretary of Amyris at 5885 Hollis Street, Suite 100, Emeryville, California 94608. If we make any substantive amendment to a provision of our Code of Business Conduct and Ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, or if we grant any waiver from any of such provisions to any such person, we will promptly disclose the nature of the amendment or waiver on the corporate governance section of our website at http://investors.amyris.com/corporate-governance.cfm.

## Security Ownership of Certain Beneficial Owners and Management

The following table sets forth information with respect to the beneficial ownership of our common stock, as of March 31, 2020, by:

- each person, or group of affiliated persons, who is known by us to beneficially own more than 5% of our voting securities;
- each of our directors;
- each of our named executive officers; and
- all of our directors and executive officers as a group.

Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission (the "SEC") and generally includes any shares over which the individual or entity has sole or shared voting power or investment power. These rules also treat as outstanding all shares of capital stock that a person would receive upon the exercise of any option, warrant or right or through the conversion of a security held by that person that are immediately exercisable or convertible or exercisable or convertible within 60 days of the date as of which beneficial ownership is determined. These shares are deemed to be outstanding and beneficially owned by the person holding those options, warrants or rights or convertible securities for the purpose of computing the number of shares beneficially owned and the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. The information does not necessarily indicate beneficial ownership for any other purpose. Except as indicated in the footnotes to the below table and pursuant to applicable community property laws, to our knowledge the persons named in the table below have sole voting and investment power with respect to all shares of common stock attributed to them in the table.

Information with respect to beneficial ownership has been furnished to us by each director and named executive officer and certain stockholders, and derived from publicly-available SEC beneficial ownership reports on Forms 3 and 4 and Schedules 13D and 13G filed by covered beneficial owners of our common stock. Percentage ownership of our common stock in the table is based on 163,891,920 shares of our common stock outstanding on March 31, 2020 (as reflected in the records of our stock transfer agent). Except as otherwise set forth below, the address of the beneficial owner is c/o Amyris, Inc., 5885 Hollis Street, Suite 100, Emeryville, California 94608.

| Name and Address of Beneficial Owner | Number of Shares Beneficially Owned (#) | Percent of Class (%) |
|---|---|---|
| **5% Stockholders** | | |
| Foris Ventures, LLC[1] | 67,268,358 | 37.8% |
| DSM International B.V[2] | 27,001,551 | 15.2% |
| FMR LLC[3] | 19,308,437 | 11.5% |
| Vivo Capital LLC[4] | 16,868,473 | 9.7% |
| Total Raffinage Chimie[5] | 9,176,833 | 5.6% |
| Loyola Capital Management, LLC[6] | 8,300,000 | 5.1% |
| **Directors and Named Executive Officers** | | |
| John Melo[7] | 798,338 | * |
| John Doerr[1][8] | 67,565,870 | 38.0% |
| Geoffrey Duyk[9] | 18,498 | * |
| Philip Eykerman[10] | 15,864 | * |
| Christoph Goppelsroeder[11] | — | — |
| Frank Kung[4][12] | 16,877,371 | 9.7% |
| James McCann[13] | 3,506 | * |
| Steven Mills[14] | 18,314 | * |

| Name and Address of Beneficial Owner | Number of Shares Beneficially Owned (#) | Percent of Class (%) |
|---|---|---|
| Carole Piwnica[15] | 5,761,101 | 3.4% |
| Lisa Qi | — | — |
| Patrick Yang[16] | 52,592 | * |
| Eduardo Alvarez[17] | 265,940 | * |
| Kathleen Valiasek[18] | 290,950 | * |
| All Directors and Executive Officers as a Group (15) Persons)[19] | 91,872,603 | 47.4% |

* Represents beneficial ownership of less than 1%.

(1) Includes 8,738,230 shares of common stock issuable upon exercise of certain warrants held by Foris, Ventures, LLC ("Foris") and 5,266,481 shares of common stock issuable after the Company obtains shareholder approval to increase its authorized capital stock pursuant to Proposal 6. Foris is indirectly owned by director John Doerr, who shares voting and investment control over the shares held by Foris. The address for Foris is 751 Laurel Street #717, San Carlos, California 94070.

(2) Includes 13,994,198 shares of common stock issuable upon exercise of certain warrants held by DSM International B.V. (together with its affiliates, "DSM"). DSM International B.V. is a wholly owned subsidiary of Koninklijke DSM N.V. Accordingly, Koninklijke DSM N.V. may be deemed to share beneficial ownership of the securities held of record by DSM International B.V. Koninklijke DSM N.V. is a publicly traded company with securities listed on the Amsterdam Stock Exchange. The address for DSM International B.V. is HET Overloon 1, 6411 TE Heerlen, Netherlands.

(3) Includes 3,484,321 shares of common stock issuable upon exercise of certain warrants held by FMR LLC. The address for FMR LLC is 245 Summer Street, Boston, Massachusetts 02210.

(4) Includes (i) 1,943,661 shares of common stock issuable upon conversion of shares of the Company's Series D Convertible Preferred Stock (the "Series D Preferred Stock") held by affiliates of Vivo Capital LLC (together with its affiliates, "Vivo") and (ii) 8,432,565 shares of common stock issuable upon exercise of certain warrants held by Vivo. Director Frank Kung is a founding member of Vivo and a voting member of the general partner of Vivo entities that hold our common stock, Series D Preferred Stock and warrants, and may be deemed to share voting and dispositive power over the shares held by such entities. The address for Vivo is 505 Hamilton Avenue, Suite 207, Palo Alto, California 94301.

(5) Includes (i) 161,609 shares of common stock issuable upon conversion of certain convertible promissory notes held by Total Raffinage Chimie ("Total") and (ii) 141,881 shares of common stock issuable upon exercise of certain warrants held by Total. The address for Total is 2, Place Jean Millier, La Défense 6, 92400 Courbevoie, France.

(6) The address for Loyola Capital Management, LLC is 222 E. Wisconsin Avenue, Suite 201, Lake Forest, Illinois 60045.

(7) Shares beneficially owned by Mr. Melo include (i) 559,863 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 156,241 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(8) Shares beneficially owned by Mr. Doerr include (i) 67,268,358 shares of common stock beneficially owned by Foris, in which Mr. Doerr indirectly owns all of the membership interests, (ii) 567 shares of common stock held by The Vallejo Ventures Trust U/T/A 2/12/96, of which Mr. Doerr is a trustee, (iii) 278,882 shares of common stock held by entities affiliated with Kleiner Perkins Caufield & Byers of which Mr. Doerr is an affiliate, excluding 16,399 shares over which Mr. Doerr has no voting or investment power, (iv) 2,266 restricted stock units, all of which were unvested as of March 31, 2020, and (v) 10,265 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(9) Shares beneficially owned by Dr. Duyk include (i) 9,566 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 4,666 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(10) Shares beneficially owned by Mr. Eykerman include (i) 2,932 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 8,199 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020. Mr. Eykerman was appointed to the Board on May 18, 2017 as the designee of DSM. Mr. Eykerman disclaims beneficial ownership of all shares of Amyris common stock that are or may be beneficially owned by DSM or any of its affiliates.

(11) Mr. Goppelsroeder was appointed to the Board on November 2, 2017 as the designee of DSM. Mr. Goppelsroeder does not beneficially own any shares of Amyris common stock directly and disclaims beneficial ownership of all shares of Amyris common stock that are or may be beneficially owned by DSM or any of its affiliates.

(12) Shares beneficially owned by Dr. Kung include (i) 16,868,473 shares of common stock beneficially owned by Vivo, over which Dr. Kung may be deemed to share voting and dispositive power, (ii) 2,932 restricted stock units, all of which were unvested as of March 31, 2020 and (iii) 5,966 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020. Dr. Kung was appointed to the Board on November 2, 2017 as the designee of Vivo. Dr. Kung disclaims beneficial ownership over shares of Amyris common stock that are or may be beneficially owned by Vivo except to the extent of his pecuniary interest therein.

(13) Shares beneficially owned by Mr. McCann include (i) 2,266 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 750 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(14) Shares beneficially owned by Mr. Mills include (i) 2,266 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 3,466 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(15) Shares beneficially owned by Ms. Piwnica include (i) 5,743,038 shares beneficially owned by Naxyris S.A. ("Naxyris"), over which Ms. Piwnica may be deemed to share voting and dispositive power, (ii) 2,266 restricted stock units, all of which were unvested as of March 31, 2020, and (iii) 10,265 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020. Ms. Piwnica was designated to serve as a director by Naxyris. Ms. Piwnica indirectly owns 100% of Naxyris, through its affiliate Arianna S.A.

(16) Shares beneficially owned by Dr. Yang include (i) 2,266 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 9,065 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(17) Shares beneficially owned by Mr. Alvarez include 30,000 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(18) Shares beneficially owned by Ms. Valiasek include (i) 134,888 restricted stock units, all of which were unvested as of March 31, 2020, and (ii) 65,944 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 31, 2020.

(19) Shares beneficially owned by all of our executive officers and directors as a group include the shares of common stock described in footnotes 7 through 18 above.

## Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires our executive officers and directors, and any person or entity who beneficially owns more than ten percent of a registered class of our common stock or other equity securities, to file with the SEC certain reports of ownership and changes in ownership of our securities. Based solely on review of such filed reports and written representations by our executive officers and directors that no other reports were required, we believe that, during 2019, no reporting person failed to file the forms required by Section 16(a) of the Exchange Act on a timely basis, except that Carole Piwnica filed one Form 5 late on April 7, 2020, with respect to certain transactions between the company and Naxyris.

## Equity Compensation Plan Information

The following table shows certain information concerning our common stock reserved for issuance in connection with our 2005 Stock Option/Stock Issuance Plan, our 2010 Equity Incentive Plan and our 2010 Employee Stock Purchase Plan, all as of December 31, 2019:

| Plan category | Number of securities to be issued upon exercise of outstanding options, warrants and rights | Weighted-average exercise price of outstanding options | Number of securities to be issued upon vesting of outstanding restricted stock units | Number of securities remaining available for future issuance under equity compensation plans(1)(2) |
|---|---|---|---|---|
| Equity compensation plans approved by security holders | 5,620,419 | $10.27 | 5,782,651 | 4,079,422 |
| Equity compensation plans not approved by security holders | — | — | — | — |
| Total | 5,620,419 | $10.27 | 5,782,651 | 4,079,422 |

(1) Includes 3,815,625 shares reserved for future issuance under our 2010 Equity Incentive Plan and 263,797 shares reserved for future issuance under our 2010 Employee Stock Purchase Plan. No shares are reserved for future issuance under our 2005 Stock Option/Stock Issuance Plan other than shares issuable upon exercise of equity awards outstanding under such plan.

(2) Effective January 1, 2020, the number of shares available for future issuance under our 2010 Equity Incentive Plan increased by 5,887,133 shares pursuant to the automatic increase provision contained in the 2010 Equity Incentive Plan and the number of shares available for future issuance under our 2010 Employee Stock Purchase Plan increased by 588,713 shares, in each case pursuant to automatic increase provisions contained in the respective plans, as discussed in more detail below.

## Executive Officers

The following table provides the names, ages and offices of each of our current executive officers as of March 31, 2020:

| Name | Age | Position |
|---|---|---|
| John Melo | 54 | Director, President and Chief Executive Officer |
| Han Kieftenbeld | 54 | Chief Financial Officer |
| Eduardo Alvarez | 56 | Chief Operating Officer |
| Nicole Kelsey | 53 | General Counsel and Secretary |

***John Melo***

See above under "Proposal 1 — Election of Directors — Business Experience and Qualifications of Directors."

***Han Kieftenbeld***

Han Kieftenbeld has served as our Chief Financial Officer since March 2020. Mr. Kieftenbeld has over 25 years of international business leadership, finance and operations experience in food, health and nutrition end-markets. Previously, from April 2016 to April 2019, Mr. Kieftenbeld served as Senior Vice President and Chief Financial Officer of Innophos Holdings, Inc., a leading international science-based producer of essential ingredients for health and nutrition, food and beverage and industrial brands. From June 2014 to July 2015, Mr. Kieftenbeld served as the Global Chief Financial Officer at AB Mauri, a worldwide leader in bakery ingredients. Prior to that, Mr. Kietenbeld held finance and operations roles of increasing reach and impact, including serving as Global Chief Procurement Officer of Ingredion Incorporated, and Global Chief Financial Officer of National Starch. Mr. Kieftenbeld started his career at Unilever in the Netherlands. In 2006, Mr. Kieftenbeld earned a joint Master of Business Administration degree from New York University Stern School of Business, London School of Economics and Political Science, and the HEC School of Management, Paris. He holds a Bachelor of Science degree in Business Economics and Accounting from Windesheim University in the Netherlands.

***Eduardo Alvarez***

Eduardo Alvarez has served as our Chief Operating Officer since October 2017. Mr. Alvarez has over 30 years of global operations experience both running and advising growth companies. Previously, he served as Global Operations Strategy Leader for PricewaterhouseCoopers LLP (PwC). During his tenure, Mr. Alvarez co-led the integration of his prior company, Booz & Company, following its acquisition by PwC. In that role, he grew operations into a global practice with $1.5 billion in revenue and 4,000 employees. Mr. Alvarez's assignments focused on delivering structural cost improvements while also driving sustained revenue growth. His experience also includes roles at Booz Allen Hamilton, General Electric and AT&T. Alvarez holds a Master of Business Administration degree from Harvard Business School, a Master's of Science in Mechanical Engineering in Computer Control and Manufacturing from the University of California, Berkeley, and a Bachelor of Science degree in Mechanical Engineering from the University of Michigan. Mr. Alvarez is a board member of The Chicago Council of Global Affairs.

***Nicole Kelsey***

Nicole Kelsey has served as our General Counsel and Secretary since August 2017. Her areas of expertise range from international M&A to U.S. Securities laws and multi-jurisdictional corporate governance. Prior to joining Amyris, she served as General Counsel and Secretary of Criteo, a global leader in commerce marketing based in Paris, for over three years. Prior to joining Criteo, Ms. Kelsey was the senior securities lawyer for Medtronic, a global leader in medical technology; she served as head M&A attorney for CIT Group, Inc.; was the general counsel of a private merchant bank; and was the senior corporate attorney for the international conglomerate Vivendi. Before going in-house, Ms. Kelsey practiced with the law firms of White & Case and Willkie, Farr & Gallagher, in Paris and New York. A Fulbright scholar, Ms. Kelsey holds a Juris Doctor degree from Northwestern Pritzker School of Law and a Bachelor of Arts degree in Political Science and International Studies from The Ohio State University; and is admitted to practice law in New York and Minnesota.

## Executive Compensation

### Summary Compensation Table

| Name and Principal Position | Year | Salary ($) | Bonus ($) | Stock Awards ($)[1] | Option Awards ($)[1] | Non-Equity Incentive Plan Compensation ($)[2] | All Other Compensation ($) | Total ($) |
|---|---|---|---|---|---|---|---|---|
| **John Melo** | 2019 | 630,000 | 185,320[3] | 144,424 | 11,680 | 333,613[4] | 1,261[5] | 1,306,298 |
| *President and Chief Executive Officer* | 2018 | 600,000 | 192,240[6] | 3,556,00 | 5,122,500 | 166,275 | 997[5] | 9,638,012 |
| **Eduardo Alvarez** | 2019 | 416,667[7] | — | — | — | 245,825 | 2,701[8] | 665,192 |
| *Chief Operating Officer* | 2018 | 400,000 | 194,140[9] | 1,270,00 | — | 110,850 | 2,437[10] | 1,977,427 |
| **Kathleen Valiasek[11]** | 2019 | 420,000 | — | — | — | 156,072 | 12,006[12] | 588,078 |
| *Chief Business Officer* | 2018 | 420,000 | 129,062[9] | 1,016,00 | 370,650 | 73,947 | 5,500[13] | 2,015,159 |

(1) The amounts in the "Stock Awards" and "Option Awards" columns reflect the aggregate grant date fair value of such awards computed in accordance with FASB ASC Topic 718, excluding the effect of estimated forfeitures. The assumptions made in the valuation of the awards are discussed in Note 11, "Stock-based Compensation" of "Notes to Consolidated Financial Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019. These amounts do not correspond to the actual value that may be recognized by our named executive officers.

(2) As required under applicable rules of the Securities and Exchange Commission, payments under our 2019 cash bonus plan are included in the column entitled "Non-Equity Incentive Plan Compensation," as they were based upon the satisfaction of pre-established performance targets, the outcome of which was substantially uncertain.

(3) Includes a discretionary cash bonus paid to Mr. Melo in the amount of $185,320 in recognition of the value lost on the voiding of certain equity awards granted to him in May 2017 that inadvertently exceeded the annual per-participant award limit contained in the 2010 Equity Incentive Plan.

(4) In March 2020, the LDCC approved a discretionary increase in the cash bonus to be paid to Mr. Melo for the annual period of 2019, from $74,119 to $95,000, in recognition of his contributions.

(5) Refers to taxes associated with long term disability insurance.

(6) Refers to a cash bonus payment under our 2018 cash bonus plan for the annual period approved by the LDCC in its discretion, notwithstanding the Company's failure to meet the funding threshold for such period.

(7) Mr. Alvarez's base salary was increased from $400,000 to $500,000, effective November 1, 2019.

(8) Includes $1,440 as a stipend for waiving medical benefits and $1,261 for taxes associated with long term disability insurance premiums.

(9) Refers to cash bonus payments under our 2018 cash bonus plan for the third quarter and annual period approved by the LDCC in its discretion, notwithstanding the Company's failure to meet the funding threshold for such periods.

(10) Includes $997 as a stipend for waiving medical benefits and $1,440 for taxes associated with long term disability insurance premiums.

(11) Ms. Valiasek assumed the newly created role of Chief Business Officer to lead the CBD business and other business development efforts while continuing to lead the financing and investor relation activities effective June 3, 2019. Previously she served as our Chief Financial Officer from January 4, 2017 to June 2, 2019.

(12) Includes $5,500 for Section 401(k) plan employer matching contribution in 2019 and cash received for individual performance under the Company's employee recognition program.

(13) Includes $5,250 for Section 401(k) plan employer matching contribution in 2018.

**Narrative Disclosure to Summary Compensation Table**

The following narrative describes the material terms of our named executive officers' annual compensation, including base salaries, cash bonuses, our equity award granting practices and severance benefits and explanations of decisions for cash and equity compensation during 2019. As noted below under "Agreements with Executive Officers," except for certain terms contained in their employment offer letters, equity award agreements and participation agreements entered into in connection with our Executive Severance Plan, none of our named executive officers has entered into a written employment agreement with us. The following narrative should be read in conjunction with the compensation tables contained elsewhere in this Proxy Statement.

***Compensation Philosophy and Objectives and Elements of Compensation***

The primary objectives of our executive compensation program in 2019 were to:

- Attract, retain, and motivate highly talented employees that are key to our success;
- Reinforce our core values and foster a sense of ownership, urgency and entrepreneurial spirit;
- Link compensation to individual, team, and company performance (as appropriate by employee level);
- Emphasize performance-based compensation for individuals who can most directly impact stockholder value; and
- Provide exceptional pay for delivering exceptional results.

Our success depends, among other things, on attracting and retaining executive officers with experience and skills in a number of different areas as we continue to drive improvements in our technology platform and production process, pursue and establish key commercial relationships, develop and commercialize products and establish a reliable supply chain and manufacturing organization.

Our business continues to be in an early stage of development, with cash management being one key consideration for our strategy and operations. Accordingly, for 2019, we intended to provide a competitive compensation program that would enable us to attract and retain the top executives and employees necessary to develop our business, while being prudent in the management of our cash and equity. Based on this approach, we continued to aim to balance and reward annual and long-term performance with a total compensation package that included a mix of both cash and equity. Our compensation program was intended to align the interests of our executive officers, key employees and stockholders and to drive the creation of stockholder value by providing long-term incentives through equity-based awards.

Our intent and philosophy in designing compensation packages at the time of hiring of new executives is based on providing compensation that we believe is sufficient to enable us to attract the necessary talent to grow our business, within prudent limitations as discussed above. Compensation of our executive officers after the initial period following their hiring is influenced by the amounts of compensation that we initially agreed to pay them, as well as by our evaluation of their subsequent performance, changes in their levels of responsibility, retention considerations, prevailing market conditions, our financial condition and prospects, and our attempt to maintain an appropriate level of internal pay parity in the compensation of existing executive officers relative to the compensation paid to more recently hired executives.

We compensate our executive officers with a combination of salaries, cash bonuses and equity awards. We believe this combination of cash and equity compensation, subject to strategic allocation among such components, is largely consistent with the forms of compensation provided by other companies with which we compete for executive talent, and, as such, matches the expectations of our executive officers and the market for executive talent. We also believe that this combination provides appropriate incentive levels to retain our executives, reward them for performance in the short term and induce them to contribute to the creation of value in Amyris over the long term. We view the different components of our executive compensation program as distinct, each serving particular functions in furthering our compensation philosophy and objectives, and, together, providing a holistic approach to achieving such philosophy and objectives.

**Base Salary.** We believe that we must maintain base salary levels that are sufficiently competitive to position us to attract and retain the executive officers we need and that it is important for our executive

officers to perceive that over time they will continue to have the opportunity to earn a salary that they regard as competitive. The LDCC of our Board (the "LDCC" or the "Committee") reviews and adjusts, as appropriate, the base salaries of our executive officers on an annual basis, and makes decisions with respect to the base salaries of new executives at the time of hire. In making such determinations, the Committee considers several factors, including our overall financial performance, the individual performance of the executive officer in question (including, for executives other than our CEO, the recommendation of our CEO based on a performance evaluation of the executive officer in question), the executive officer's potential to contribute to our annual and longer-term strategic goals, the executive officer's scope of responsibilities, qualifications and experience, competitive market practices for base salary, prevailing market conditions and internal pay parity.

**Cash Bonuses.** We believe the ability to earn cash bonuses should provide incentives to our executive officers to effectively pursue goals established by our Board and should be regarded by our executive officers as appropriately rewarding effective performance against these goals. For 2019, the LDCC adopted a cash bonus plan for our executive officers, the details of which are described below under "2019 Compensation." The 2019 cash bonus plan included company performance goals and individual performance goals and was structured to motivate our executive officers to achieve our short-term financial and operational goals and to reward exceptional company and individual performance. In particular, our 2019 cash bonus plan was designed to provide incentives to our executive officers to achieve 2019 company financial and operational targets on a quarterly and annual basis, together with various key individual operational objectives that were considered for annual performance achievement. In general, target bonuses for our executive officers are initially set in their offer letters based on similar factors to those described above with respect to the determination of base salary. For subsequent years, target bonuses for our executive officers may be adjusted by the LDCC based on various factors, including any modifications to base salary, competitive market practices and the other considerations described above with respect to adjustments in base salary. In March 2020, the LDCC approved a discretionary increase in the cash bonus to be paid to Mr. Melo for the annual period of 2019, from $74,119 to $95,000, in recognition of his contributions. In addition, in January 2019 the LDCC approved a discretionary cash bonus payment to our CEO. See "2019 Compensation — Equity Compensation — 2019 CEO Cash Bonus and Equity Awards" below for more information.

**Equity Awards.** Our equity awards are designed to be sufficiently competitive to allow us to attract and retain talented and experienced executives. In 2019, the LDCC did not grant annual equity awards to our executive officers. Stock option awards for executive officers are granted with an exercise price equal to the fair market value of our common stock on the date of grant; accordingly, such stock option awards will have value to our executive officers only if the market price of our common stock increases after the date of grant. Restricted Stock Unit ("RSU") awards represent the right to receive full-value shares of our common stock without payment of any exercise or purchase price. We have a practice that began in 2016 to place a greater emphasis on RSU awards, as compared to stock options, to increase the perceived value of equity awards granted to our executive officers. The relative weighting between the stock option and RSU awards granted to our executive officers is based on the LDCC's review of market practices. In January 2019, the LDCC approved a discretionary equity award to our CEO. See "2019 Compensation — Equity Compensation — 2019 CEO Cash Bonus and Equity Awards" below for more information. In addition, in 2018, the LDCC approved special equity awards to our CEO consisting of a stock option subject to performance-based vesting conditions and RSUs with time-based vesting requirements, as described in more detail below under "2019 Compensation — Equity Awards — 2018 CEO Equity Awards."

We typically grant stock option awards with four-year vesting schedules. Stock option grants include a one year "cliff", where the stock option award vests as to 25% of the shares of our common stock subject to the award after one year, and monthly thereafter, subject to continued service through each vesting date. Our RSU awards have generally been granted with three-year vesting schedules, vesting as to 1/3rd of the units subject to the award annually, subject to continued service through each vesting date. We believe such vesting schedules are generally consistent with the option and RSU award granting practices of our peer group companies. In January 2019, the LDCC approved a discretionary equity award to our CEO with non-standard vesting terms. See "2019 Compensation — Equity Compensation — 2019 CEO Cash Bonus and Equity Awards" below for more information. In addition, in 2018, we granted stock option and/or RSU awards with non-standard vesting terms to certain of our executive officers, including our CEO, the details of which are described below under "2019 Compensation — Equity Awards — 2018 CEO Equity Awards."

We grant equity awards to our executive officers in connection with their hiring, or, as applicable, their promotion from other roles at the Company. The size of initial equity awards is determined based on the executive's position with us and takes into consideration the executive's base salary and other compensation as well as an analysis of the grant and compensation practices of our peer group companies in connection with establishing our overall compensation policies. The initial equity awards are generally intended to provide the executive with an incentive to build value in the Company over an extended period of time, while remaining consistent with our overall compensation philosophy. Insofar as we have to date incurred operating losses and consumed substantial amounts of cash in our operations, and to compensate for cash salaries and cash bonus opportunities that were, in certain cases, lower than those offered by competing employers, we have sought to attract executives to join us by granting equity awards that would have the potential to provide significant value if we are successful.

We grant additional equity awards in recognition of commendable performance, in connection with significant changes in responsibilities, and/or in order to better ensure appropriate retention and incentive opportunities from time to time. Further, equity awards are a component of the annual compensation package of our executive officers.

**Role of Stockholder Say-on-Pay Votes.** At our 2011, 2014 and 2017 annual meetings of stockholders, our stockholders voted, on an advisory basis, on the compensation of our named executive officers (commonly referred to as a "stockholder say-on-pay vote"). A majority of the votes cast were voted in favor of the non-binding advisory resolutions approving the compensation of our named executive officers as summarized in our 2011, 2014 and 2017 proxy statements. In 2017, 99% of the votes cast on the stockholder say-on-pay proposal approved, on a non-binding advisory basis, the compensation of our named executive officers as summarized in our 2017 proxy statement. The LDCC believes that this affirms our stockholders' support of our approach to executive compensation, and, accordingly, did not materially change its approach to executive compensation in 2019 and does not intend to do so in 2020. In addition, in 2017 our stockholders approved, and our Board subsequently adopted, a three-year interval for conducting future stockholder say-on-pay votes. Our stockholders will again be voting, on an advisory basis, on the compensation of our named executive officers at our 2020 annual meeting. For more information, see "Proposal 3 — Non-Binding Advisory Vote on Compensation of Named Executive Officers" in this Proxy Statement.

**Role of Compensation Consultant.** In connection with an annual review of our executive compensation program for 2019, the LDCC retained Compensia, a national compensation consulting firm, to provide advice and guidance on our executive compensation policies and practices and relevant information about the executive compensation practices of similarly situated companies. In 2019, Compensia assisted in the preparation of materials for executive compensation proposals in advance of Committee meetings, including 2019 compensation levels for certain of our executive officers and the design of our cash bonus, equity, severance and change of control programs and other executive benefit programs. Compensia also reviewed and advised the LDCC on materials relating to executive compensation prepared by management for Committee consideration.

Compensia, under the direction of the LDCC, may continue to periodically conduct a review of the competitiveness of our executive compensation program, including base salaries, cash bonus opportunities, equity awards and other executive benefits, by analyzing the compensation practices of companies in our compensation peer group, as well as data from third-party compensation surveys. Generally, the LDCC uses the results of such analyses to assess the competitiveness of our executive officers' total compensation, and to determine whether each component of such total compensation is properly aligned with reasonable and responsible practices among our peer companies.

The LDCC also retained Compensia for assistance in reviewing and making recommendations to our Board regarding the compensation program for our non-employee directors when it was originally adopted in late 2010 and again when such program was subsequently amended in December 2015 and November 2016, and to provide market data and materials to the Committee.

In November 2018 and December 2019, the LDCC reviewed the independence of Compensia under applicable compensation consultant independence rules and standards and determined that Compensia had no conflict of interest with Amyris.

### *Compensation Decision Process*

Under the charter of the LDCC, our Board has delegated to the Committee the authority and responsibility to discharge the responsibilities of the Board relating to the compensation of our executive officers. This includes, among other things, review and approval of the compensation of our executive officers and of the terms of any compensation agreements with our executive officers. For more information regarding the functions and composition of the LDCC, please refer to "Proposal 1 — Election of Directors — Committees of the Board" above.

In general, the LDCC is responsible for the design, implementation and oversight of our executive compensation program. In accordance with its charter, the Committee determines the annual compensation of our CEO and other executive officers and reports its compensation decisions to our Board. The Committee also administers our equity compensation plans, including our 2010 Equity Incentive Plan (the "2010 EIP") and 2010 Employee Stock Purchase Plan. Generally, our Human Resources, Finance and Legal departments work with our Chief Executive Officer to design and develop new compensation programs applicable to our executive officers and non-employee directors, to recommend changes to existing compensation programs, to recommend financial and other performance targets to be achieved under those programs, to prepare analyses of financial data, to prepare peer compensation comparisons and other committee briefing materials, and to implement the decisions of the Committee. Members of these departments and our Chief Executive Officer also meet separately with Compensia to convey information on proposals that management may make to the LDCC, as well as to allow Compensia to collect information about Amyris to develop its recommendations. In addition, our Chief Executive Officer conducts reviews of the performance and compensation of our other executive officers, and based on these reviews and input from Compensia and our Human Resources department, makes recommendations regarding compensation for such executive officers directly to the Committee. For our CEO's compensation, Compensia reviews relevant market data with the Chair of the LDCC, as well as the performance of our CEO, and based on such review makes a recommendation regarding our CEO's compensation, which is then presented to the LDCC. None of our executive officers participated in the determinations or deliberations of the LDCC regarding the amount of any component of his or her own 2019 compensation.

### *2019 Compensation*

**Background.** In designing the compensation program and making decisions for our executive officers for 2019, the Committee sought to balance achievement of critical operational goals with retention of key personnel, including our executive officers. Accordingly, the Committee focused in particular on providing a strong equity compensation program in order to provide strong retention incentives through challenging periods. It also focused on cash management in setting target total cash compensation (and associated salary and bonus target levels) for our executive officers. Another key theme for 2019 was establishing strong incentives to drive our performance, including continued emphasis on company performance goals over individual goals in the 2019 cash bonus plan and on equity compensation for longer-term upside potential and sharing in company growth.

**Base Salaries.** In February and November 2019, the LDCC reviewed the base salaries, bonus targets and target total cash compensation of our executive officers against its compensation peer group, as supplemented by relevant industry survey data, and, as a result of such analysis, as well as consideration of the factors described above under "Compensation Philosophy and Objectives and Elements of Compensation — Base Salary," approved (i) effective January 1, 2019, an increase to the base salary of our CEO from $600,000 to $630,000 and (ii) effective November 1, 2019, an increase to the base salary of Mr. Alvarez from $400,000 to $500,000.

**Cash Bonuses.** In November 2018, the LDCC adopted a 2019 cash bonus plan for our executive officers, which was amended in February 2019 and August 2019. Under the plan, as amended in August 2019, our executive officers were eligible for bonuses based on the achievement of company metrics for each quarter in 2019, with a portion of their target bonus allocated to annual company and individual performance. The 2019 cash bonus plan was intended to provide a balanced focus on both our long-term strategic goals and shorter-term quarterly operational goals. The 2019 cash bonus plan provided for funding and payout of cash bonus awards based on our quarterly and annual performance during 2019 under pre-established metrics selected by the LDCC for each quarter and for the year. Payouts under the 2019 cash bonus plan were made following a

review of our results and performance each quarter and, for the fourth quarter and annual components, a review occurred in March 2020 with respect to the fourth quarter and annual performances of the Company as well as each executive officer's individual performance. The 2019 cash bonus plan provided for a 50% weighting for quarterly achievement (with each quarter worth 12.5% of the total bonus fund for the year) and 50% for full year 2019 achievement. In addition, in January 2019, the LDCC approved a discretionary cash bonus to our CEO. On March 19, 2020, the LDCC approved a discretionary increase in the cash bonus to be paid to Mr. Melo for the annual period of 2019, from $74,119 to $95,000, in recognition of his contributions. See "2019 Compensation — Equity Compensation — 2019 CEO Cash Bonus and Equity Awards" below for more information.

The total funding possible under the 2019 cash bonus plan was based on a cash value (or the "target bonus fund") determined by the executive officers' target bonus levels. Target bonus levels for our executive officers in 2019 varied by individual, but were generally set between 50% and 100% of their annual base salary. In February 2019, the LDCC reviewed our executive officers' bonus targets as part of its review of target total cash compensation for similar roles among executive officers at companies in the compensation peer group, as supplemented by relevant industry survey data, and, as a result of such analysis, as well as consideration of the factors described above under "Compensation Philosophy and Objectives and Elements of Compensation — Cash Bonuses," approved increases to the target bonus level for one of our executive officers, Ms. Kelsey, from 40% to 50% of annual base salary effective January 1, 2019.

The quarterly and annual funding of the 2019 cash bonus plan was based on achievement of the following company performance metrics for the applicable quarter and full year 2019: GAAP revenue (weighted 100% for each quarterly period and 50% for the annual period), operating expenses (weighted 30% for the annual period) and direct gross margin (weighted 20% for the annual period). For each quarterly period and for the annual period under the 2019 cash bonus plan, "threshold," "target" and "superior" performance levels were set for each applicable performance metric, which performance levels were intended to capture the relative difficulty of achievement of that metric.

If we did not achieve at least a 50% weighted average achievement level of the applicable performance metrics described above that achieved at least the "threshold" performance level for a given bonus plan period (the "funding threshold"), no funding would occur for such period. If we achieved the funding threshold level, 50% funding would occur. For a weighted average achievement between the funding threshold level and "target" level, a pro rata increase in funding would occur up to 100% of the target bonus fund allocated to such period. For weighted average achievement above the target level, an increase in funding of 1.67% of the target bonus fund for every 1% above target performance would occur up to 150% of the target bonus fund for the applicable bonus plan period.

Any payouts for the quarterly bonus periods would be the same as the funded level (provided the recipient meets eligibility requirements), subject to the final discretion of the Committee. Payouts for the annual bonus period would be made from the aggregate funded amount in the discretion of the Committee based on company and individual performance, and could range from 0% to 200% of an individual's funded amount for the annual bonus period. The Committee chose to emphasize company performance goals for the quarterly and annual bonus plan periods given the critical importance of our short term strategic goals, but also to retain reasonable incentives and rewards for exceptional individual performance, recognizing the value of such incentives and rewards to our operational performance and to individual retention.

Based on the foregoing bonus plan structure, individual bonuses were awarded each quarter based on the LDCC's assessment of company achievement, and with respect to the annual bonus, the LDCC's assessment of company achievement as well as each executive officer's contributions to such achievement, his or her progress toward achieving his or her individual goals, and his or her demonstrating our core values. Actual payment of any bonuses with respect to 2019 remained subject to the final discretion of the Committee.

*Company Performance Goals.* Company performance during 2019 was measured and weighted against quarterly and annual targets established for GAAP revenue, operating expenses and direct gross margin, as applicable. The quarterly and annual weighting and achievement for each applicable metric are described below.

These targets were initially approved by the LDCC in November 2018. The annual and first quarter targets were then amended in February 2019, and the second, third and fourth quarter targets were adopted

and amended at subsequent meetings of the Committee during 2019. The applicable targets for each quarter were discussed and evaluated in October and November 2019 as well as in March 2020, based on quarterly and annual performance (in March 2020, the LDCC discussed and evaluated the fourth quarter as well as the full year 2019 results) and continued development of our business and operating plans for 2019 and beyond. Achievement levels were determined in the discretion of the LDCC following each period under the 2019 cash bonus plan.

*Degree of Difficulty in Achieving Performance Goals.* The LDCC considered the likelihood of achievement when recommending and approving, respectively, the Company and individual performance goals and bonus plan structures for each of the 2019 cash bonus plan periods, but it did not undertake a detailed statistical analysis of the difficulty of achievement of each measure. For 2019, the Committee considered the 50% weighted average achievement level to be attainable with normal effort, 100% to be challenging but achievable with significant effort, requiring circumstances to align as predicted, and any amounts in excess of 100% to be difficult to achieve, requiring additional sources of revenue, breakthroughs in technology, manufacturing operations, process development or business development, and exceptional levels of effort on the part of the executive team, as well as favorable external conditions.

*2019 Quarterly and Annual Bonus Plan Funding and Award Decisions.* In each of October 2019, November 2019 and March 2020, the LDCC determined that our quarterly and annual performance goals were achieved as follows:

| Company Performance Goal | Weight | Weighted Achievement Level | Funding Level |
|---|---|---|---|
| **Q1** | | | |
| GAAP Revenue | 100% | 58% | |
| **Total Q1** | **100.0%** | **58.0%** | **58.0%** |
| **Q2** | | | |
| GAAP Revenue | 100% | 130% | |
| **Total Q2** | **100.0%** | **130.0%** | **150.0%** |
| **Q3** | | | |
| GAAP Revenue | 100% | 87% | |
| **Total Q3** | **100.0%** | **87.0%** | **87.0%** |
| **Q4** | | | |
| GAAP Revenue | 100% | 0% | |
| **Total Q4** | **100.0%** | **0%** | **0%** |
| **ANNUAL** | | | |
| GAAP Revenue | 50% | 103% | |
| Operating Expenses | 30% | 0% | |
| Direct Gross Margin | 20% | 85% | |
| **Total Annual** | **100.0%** | **68.6%** | **34.3[1]%** |

(1) On March 19, 2020, the LDCC approved the bonus funding for the 2019 annual period for all eligible employees, with a reduction of 50% from the applicable weighted average achievement. the LDCC's determinations were based on a review of the achievement of certain quarterly and annual performance goals under the 2018 and 2019 cash bonus plans, specifically in light of the restatement of the Company's financial statements, as filed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

*Individual Performance Goals.*

For the annual portion of the 2019 cash bonus plan tied to individual performance, the Committee considered several factors, including the following:

- For our CEO, the achievement of growing GAAP revenue and customer impact, as well as improving operating expenses.

- For Mr. Alvarez, the achievement of meeting our production and fulfillment plan, managing costs, overseeing timely construction of a new production facility in Brazil and taking on additional operational roles and accountabilities.
- For Ms. Valiasek, the developing CBD business and managing the financing and investor relation activities.

The Committee considered a variety of factors in determining, in its discretion, to award payouts under the 2019 cash bonus plan. In addition to the levels of company achievement (for the quarterly and annual portions) and individual performance (for the annual portion) categories, the Committee considered our cash needs as well as the level of performance of each named executive officer in achieving company results and their respective assigned individual goals. Based on the foregoing, and taking into account the factors described above, the Committee approved the following cash bonus awards under the 2019 cash bonus plan:

| Name | 2019 Cumulative Quarterly Bonus Payouts ($) | 2019 Annual Portion Bonus Payout ($) | 2019 Aggregate Annual and Quarterly Bonus Payouts ($) | Annual Bonus Target ($) | 2019 Actual Bonus Earned as a % of Target Bonus |
|---|---|---|---|---|---|
| John Melo | 238,613 | 95,000[(1)] | 333,613 | 630,000 | 53% |
| Eduardo Alvarez[(2)] | 151,500 | 94,325 | 245,825 | 416,667 | 59% |
| Kathleen Valiasek | 127,260 | 28,812 | 156,072 | 336,000 | 46% |

(1) In March 2020, the LDCC approved a discretionary increase in the cash bonus to be paid to Mr. Melo for the annual period of 2019, from $74,119 to $95,000, in recognition of his contributions.

(2) Mr. Alvarez's base salary was increased from $400,000 to $500,000, effective November 1, 2019.

We believe that the payment of these awards was appropriate because the 2019 cash bonus plan appropriately held our named executive officers accountable for achievement of company and individual goals, and the payouts were reasonable and appropriate in light of our progress towards our business objectives.

**Equity Awards.** Throughout 2019, the LDCC decided to not award equity grants for the executive officers. In January 2019, the LDCC approved special equity awards for our CEO, as described below (the "2019 CEO Equity Awards").

*2019 CEO Cash Bonus and Equity Awards*

Because of an equity award granted to our CEO in May 2017 (the "2017 Award") in excess of the limitation on the number of shares any participant may receive in any calendar year under the 2010 EIP (the "share limit"), which 2017 Award was further rescinded, voided and new equity awards were granted to our CEO in compliance with the share limit, in January 2019 the LDCC approved, in light of additional adjustments required to be made in respect to the 2017 Award, (i) a one-time cash bonus payment to our CEO in the amount of $185,320, and (ii) a grant to our CEO consisting of an option to purchase 4,161 shares of our common stock and 38,616 RSUs with the terms described below (the "2019 CEO Equity Awards").

In accordance with our policy regarding equity award grant dates, the 2019 CEO Equity Awards were granted on January 14, 2019, the first business day of the week following the week in which such awards were approved, with the exercise price of the option being set at $3.74 per share, the closing price of our common stock on Nasdaq on such date, in accordance with the terms of the 2010 EIP. The stock option under the 2019 CEO Equity Award vests over 28 months, with 1/28$^{th}$ of the shares subject to the award vesting monthly from the vesting commencement date of January 1, 2019. The RSUs under the 2019 CEO Equity Awards vest in two equal annual installments on May 1 of each of 2019 and 2020, subject to Mr. Melo's continued service on each vesting date. This vesting schedule is shorter than our typical three-year vesting schedule for RSUs granted to our executive officers and is intended to align with the 2017 Award being adjusted. Other than the vesting schedule, the terms of the 2019 CEO Equity Awards are identical to other equity awards granted to our executive officers.

*2018 CEO Equity Awards*

Because of the direct relationship between the value of our equity awards and the fair market value of our common stock, and in order to incentivize our CEO in a manner that aligns his interests with our long-term strategic direction and the interests of our stockholders and reduces the possibility of business decisions that favor short-term results at the expense of long-term value creation, in April 2018 the LDCC approved, with the support of the Board, a grant to our CEO of (i) an option to purchase 3,250,000 shares of our common stock, such award being subject to performance-based vesting conditions as described below (the "CEO Performance Option"), and (ii) 700,000 RSUs with the terms described below (the "CEO RSU" and together with the CEO Performance Option, the "2018 CEO Equity Awards"). The grant of the 2018 CEO Equity Awards was contingent upon approval by our stockholders of both the 2018 CEO Equity Awards and certain amendments to the 2010 EIP to, among other things, increase the annual per-participant award limit thereunder, which approvals were obtained at our 2018 annual meeting of stockholders held on May 22, 2018. In accordance with our policy regarding equity award grant dates, the CEO Equity Awards were granted on May 29, 2018, the first business day of the week following the week in which such awards were approved, with the exercise price of the CEO Performance Option being set at $5.08 per share, the closing price of our common stock on Nasdaq on such date, in accordance with the terms of the 2010 EIP.

***CEO Performance Option***. The CEO Performance Option is a performance-based nonqualified stock option and therefore the CEO will receive compensation from such stock option only to the extent that the company achieves the applicable performance milestones.

Performance Metrics & Vesting. The CEO Performance Option is divided into four tranches as described in the table below (each a "Tranche"). Each of the four Tranches of the CEO Performance Option will vest on or after the applicable vesting date for the Tranche (the "Earliest Vesting Date") provided: (i) the Board or the LDCC certify that both the EBITDA Milestone and the Stock Price Milestone (collectively, the "Milestones") for such Tranche have been met and (ii) Mr. Melo remains our CEO on the applicable vesting date. Any Milestone may be met before, at or after the applicable Earliest Vesting Date for a Tranche provided that the Milestone is met during its applicable Measurement Period. The EBITDA Measurement Period starts January 1, 2018 and ends December 31, 2021. The Stock Price Measurement Period starts January 1, 2018 and ends December 31, 2022. In the event that either the EBITDA Milestone or the Stock Price Milestone is not yet achieved for a Tranche, no shares attributable to such Tranche will be eligible to vest on such Tranche's Earliest Vesting Date; provided, however, the Milestones will remain eligible to be achieved during the remaining EBITDA Measurement Period and Stock Price Measurement Period, as applicable. For clarity, upon the achievement of both the applicable EBITDA Milestone and Stock Price Milestone for a Tranche, the shares attributable to such Tranche may not vest until such Tranche's Earliest Vesting Date, and only if Mr. Melo remains the CEO on such date. More than one Tranche may vest simultaneously provided that: the Earliest Vesting Date for each applicable Tranche has occurred, the requisite EBITDA Milestone and Stock Price Milestone for each Tranche have been met and Mr. Melo continues as the CEO through the applicable date of vesting. The table below sets forth the number of shares, EBITDA Milestone, Stock Price Milestone and Earliest Vesting Date for each Tranche:

| Tranche | Number of Shares | EBITDA Milestone ($M) | Stock Price Milestone | Earliest Vesting Date |
|---|---|---|---|---|
| 1 | 750,000 | $ 10 | $15 | July 1, 2019 |
| 2 | 750,000 | $ 60 | $20 | July 1, 2020 |
| 3 | 750,000 | $ 80 | $25 | July 1, 2021 |
| 4 | 1,000,000 | $100 | $30 | July 1, 2022 |

*EBITDA Milestone*. The EBITDA Milestone for a Tranche is achieved if Amyris's EBITDA (as described below) equals or exceeds the EBITDA Milestone set forth in the table above for such Tranche for any fiscal year during the EBITDA Measurement Period. The EBITDA Measurement Period starts January 1, 2018 and ends December 31, 2021. The Board or the LDCC will measure and certify the level of achievement of the EBITDA Milestone as of the end of each fiscal year within the EBITDA Measurement Period.

For purposes of the EBITDA Milestone, "EBITDA" shall mean Amyris's net (loss) income attributable to common stockholders for the relevant fiscal year during the EBITDA Measurement Period as determined

in accordance with U.S. Generally Accepted Accounting Principles ("GAAP") and as reported by Amyris in its audited financial statements contained in its Annual Report on Form 10-K for the relevant fiscal year filed with the SEC, plus interest expense (benefit), provision for income taxes, depreciation and amortization for the same fiscal year as reflected in the audited financial statements. For the avoidance of doubt, there will be no adjustment to the reported net (loss) income attributable to common stockholders for stock based compensation in determining EBITDA.

In the event of unusual non-recurring events such as acquisition activities or divestitures of significant assets or changes in applicable accounting rules, as a result of which the calculation of Amyris's EBITDA during the EBITDA Measurement Period is increased or decreased by 10% or more in determining Amyris's audited financial statements contained in its Annual Report on Form 10-K filed with the SEC for the most recently completed fiscal year, the Board or, if the Board delegates authority to the LDCC, the LDCC may provide for one or more equitable adjustments to the EBITDA Milestones to preserve the original intent regarding the EBITDA Milestones at the time of the initial award grant.

As of the date of this Proxy Statement, none of the EBITDA Milestones for any of the Tranches had been achieved.

*Stock Price Milestone*. The Stock Price Milestone for a Tranche is achieved if each of (i) the average of the daily closing prices of our common stock on the Nasdaq Global Select Market for any one hundred and eighty (180)-consecutive day period starting at any time after the last day of the fiscal year in which the applicable EBITDA Milestone was achieved for the applicable Tranche and ending during the Stock Price Measurement Period and (ii) the average of the daily closing prices of our common stock on the Nasdaq Global Select Market for a thirty (30)-consecutive day period ending on the date on which the 180-day average stock price set forth in the table is achieved for the applicable Tranche equals or exceeds the Stock Price Milestone for the applicable Tranche during the Stock Price Measurement Period. The Stock Price Measurement Period starts January 1, 2018 and ends December 31, 2022.

The Stock Price Milestone will be adjusted to reflect events such as a stock split or recapitalization in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the CEO Performance Option.

The LDCC considers the Stock Price Milestone to be a challenging hurdle and included the EBITDA Milestone to promote Amyris's continued focus on growth, sustainability and profitability. The LDCC selected EBITDA (as defined above) as the appropriate measure because it believes EBITDA is a metric that is commonly used for companies at this stage of development and because many of Amyris's stockholders use it to evaluate Amyris's performance and viability. It is a measure of cash generation from operations that does not disincentivize Amyris from making additional investments to grow further. The EBITDA Milestone is designed to ensure that Amyris maintains operating discipline but does not represent Amyris's target EBITDA for any future period. The LDCC included the Stock Price Milestone to drive sustained, long-term stockholder returns, and to further align Mr. Melo's compensation opportunity to long-term stockholder interests. In establishing the EBITDA Milestone and Stock Price Milestone, the LDCC carefully considered a variety of factors, including Amyris' growth trajectory and internal growth plans. The LDCC also reviewed special CEO equity awards approved by other public companies as a reference point for setting the magnitude and terms of the CEO Performance Option and CEO RSU.

As of the date of this Proxy Statement, none of the Stock Price Milestones for any of the Tranches had been achieved.

Term. The term of the CEO Performance Option is ten years from the date of the grant, unless Mr. Melo's employment with Amyris is terminated prior to such date. Accordingly, Mr. Melo will have ten years from the date of grant to exercise any portion of the CEO Performance Option that has vested on or prior to such date, provided that he remains employed at Amyris.

Post-Exercise Holding Period. Mr. Melo must hold at least fifty percent (50%) of the shares he acquires upon exercise of the CEO Performance Option (net of any shares sold to pay the exercise price and any tax withholding obligations with respect to the CEO Performance Option) for two years post-exercise.

The LDCC selected a two-year holding period in order to further align Mr. Melo's interests with Amyris stockholders' interests for two years following the exercise of any portion of the CEO Performance Option. Such alignment ensures that Mr. Melo will be focused on sustaining Amyris' success both before and after he exercises his CEO Performance Option.

Employment Requirement for Continued Vesting. Mr. Melo must continue to be employed as Amyris' CEO upon each vesting date in order for the corresponding Tranche to vest under the CEO Performance Option. If Mr. Melo is still employed at Amyris in a role other than CEO, he will no longer be able to vest under the CEO Performance Option but can continue to hold any unexercised, vested portion of the CEO Performance Option for the full term of the CEO Performance Option.

Termination of Employment. Except in the context of a change of control of Amyris, there will be no acceleration of vesting of the CEO Performance Option if the employment of Mr. Melo is terminated, or if he dies or becomes disabled. In other words, termination of Mr. Melo's employment with Amyris will preclude his ability to earn any then-unvested portion of the CEO Performance Option following the date of his termination.

Change of Control of Amyris. If Amyris experiences a change of control, such as a merger with or purchase by another company, vesting under the CEO Performance Option will not automatically accelerate.

In the event of a change of control, the performance under the CEO Performance Option will be determined as of the change of control. For this change of control determination, the EBITDA Milestone will be disregarded and a Stock Price Milestone relating to any Tranche that has not yet vested shall be achieved if the per share price (plus the per share value of any other consideration) received by the Company's stockholders in the change of control equals or exceeds the applicable Stock Price Milestone. To the extent a Stock Price Milestone for a Tranche is achieved upon a change of control, the shares specified for such Tranche will be subject to time-based vesting (the "COC Time-Based Options"), and such COC Time-Based Options shall vest upon the later of the date of the change of control and the Earliest Vesting Date applicable to such Tranche, subject to Mr. Melo remaining the CEO on each such vesting date. To the extent a Stock Price Milestone for a Tranche is not achieved as a result of the change of control, such Tranche will be forfeited automatically as of the immediately prior to closing of the change of control and never shall become vested. Notwithstanding the foregoing, if Mr. Melo is terminated without cause or resigns for good reason in connection with the change of control, any then unvested COC Time-Based Options will accelerate, subject to Mr. Melo's satisfaction of certain terms and conditions, including, but not limited to delivery of a release of claims, pursuant to the Severance Plan (as defined below), the terms of which are described below under "Severance Plan" and "Potential Payments upon Termination and upon Termination Following a Change in Control."

In addition, if the successor or acquiring corporation (if any) of Amyris refuses to assume, convert, replace or substitute the CEO Performance Option in connection with a change of control, 100% of Mr. Melo's COC Time-Based Options shall accelerate and become vested effective immediately prior to the change of control.

The treatment of the CEO Performance Option upon a change of control is intended to align Mr. Melo's interests with Amyris's other stockholders with respect to evaluating potential change of control offers.

Clawback. In the event of a restatement of Amyris's financial statements previously filed with the SEC as a result of material noncompliance with financial reporting requirements ("restated financial results"), Amyris will require forfeiture (or repayment, as applicable) of the portion of the CEO Performance Option in excess of what would have been earned or paid based on the restated financial results.

***CEO RSU***. The CEO RSU will vest in four equal annual installments on July 1 of each of 2019, 2020, 2021 and 2022, subject to Mr. Melo' s continued service on each vesting date. This four-year vesting schedule is longer than our typical three-year vesting schedule for RSUs granted to our executive officers and is intended to further align Mr. Melo's compensation opportunity to long-term stockholder interests and to promote retention and continuity in our business. Other than the vesting schedule, the terms of the CEO RSU are identical to other RSU awards granted to our executive officers.

**Severance Plan.** In November 2013, the LDCC adopted the Amyris, Inc. Executive Severance Plan (or the "Severance Plan"). The Severance Plan had an initial term of 36 months and thereafter will be automatically extended for successive additional one-year periods unless we provide six months' notice of non-renewal prior to the end of the applicable term. In May 2016, May 2017, February 2018 and February 2019, the LDCC reviewed the terms of the Severance Plan and elected to allow it to automatically renew upon the expiration of its initial term in November 2016 and renewal terms in November 2017 and November 2018, respectively. The LDCC adopted the Severance Plan to provide a consistent and updated severance framework for our executive officers that aligns with peer practices. The terms of the Severance Plan, including the potential amounts payable under the Severance Plan and related defined terms, are described in detail below under "Potential Payments upon Termination and upon Termination Following a Change in Control." All of our named executive officers, and all senior level employees of Amyris that are eligible to participate in the Severance Plan (or, collectively, the "participants"), have entered into participation agreements to participate in the Severance Plan. Generally, the payments and benefits under the Severance Plan supersede and replace any rights the participants have in connection with any change of control or severance benefits contained in such participants' employment offer letters, equity award agreements or any other agreement that specifically relates to accelerated vesting of equity awards; provided, that (i) our CEO is entitled to the rights and benefits provided for in the CEO Performance Option in connection with a change of control of Amyris, as described above and (ii) in the event of any conflict between the terms of the CEO Performance Option and Mr. Melo's participation agreement or the Severance Plan relating to accelerated vesting of equity awards, the terms of the CEO Performance Option would govern and control. In addition, Mr. Alvarez's participation agreement provides that in the event that prior to full vesting of Mr. Alvarez's new hire equity awards, including the Alvarez 2018 Award (collectively, the "Alvarez New Hire Awards"), Mr. Alvarez's employment with the Company terminates in circumstances entitling him to severance payments and benefits under the Severance Plan, whether or not in connection with a change of control, then upon such termination the vesting and exercisability of each Alvarez New Hire Award will be automatically accelerated in full and the forfeiture provisions and/or company right of repurchase of each Alvarez New Hire Award will automatically lapse accordingly.

We believe that the Severance Plan appropriately balances our need to offer a competitive level of severance protection to our executive officers and to induce them to remain in our employ through the potentially disruptive conditions that may exist around the time of a change of control, while not unduly rewarding executive officers for a termination of their employment.

**Other Executive Benefits and Perquisites.** We provide the following benefits to our executive officers on the same basis as other eligible employees:

- health insurance;
- time off and sick days;
- life insurance and supplemental life insurance;
- short-term and long-term disability; and
- a Section 401(k) plan with an employer matching contribution.

We believe that these benefits are generally consistent with those offered by other companies with which we compete for executive talent.

Some of the executive officers whom we have hired, including Mr. Alvarez, held positions in locations outside of Northern California at the time they agreed to join us. We have agreed in these instances to pay certain relocation and travel expenses to these executive officers, including housing and rental car expenses. The amounts of relocation and travel expenses paid to our named executive officers are included in the "All Other Compensation" column of the "Summary Compensation Table" above and the related footnotes. Given the high cost of living in the San Francisco Bay Area relative to most other metropolitan areas in the United States, we believe that for us not to be limited to hiring executives located near our headquarters in Emeryville, California, we must be willing to offer to pay an agreed upon amount of relocation costs.

**Other Compensation Practices and Policies.** The following additional compensation practices and policies apply to our executive officers in 2019:

*Timing of Equity Awards.* The timing of equity awards has been determined by our Board or the LDCC based on our Board's or the LDCC's view at the time regarding the adequacy of executive equity interests in us for purposes of retention and motivation.

In March 2018, November 2018 and December 2019, our Board and the LDCC, respectively, ratified our existing policy regarding equity award grant dates, fixing grant dates in an effort to ensure the integrity of the equity award granting process. This policy took effect beginning with equity awards granted after the original adoption of the policy in March 2011. Under the policy, equity awards are generally granted on the following schedule:

- For equity awards to ongoing employees, the grant date is set as the first business day of the week following the week in which the award is approved; and
- For equity awards to new hires, the grant date is set as the first business day of the week following the later of the week in which the award is approved or the week in which the new hire commences his or her employment.

*Tax Considerations.* Generally, Section 162(m) of the U.S. Internal Revenue Code ("Section 162(m)") disallows a federal income tax deduction for public corporations of remuneration in excess of $1 million paid for any fiscal year to their chief executive officer and up to three other executive officers whose compensation is required to be disclosed to their stockholders under the Securities Exchange Act of 1934 because they are our most highly-compensated executive officers ("covered employees"). The exemption from Section 162(m)'s deduction limit for "performance-based compensation" has been repealed, effective for taxable years beginning after December 31, 2017, such that compensation paid to our covered employees in excess of $1 million will not be deductible unless it qualifies for transition relief applicable to certain arrangements in place as of November 2, 2017. While the LDCC has not adopted a formal policy regarding tax deductibility of the compensation paid to our executive officers, tax deductibility under Section 162(m) is a factor in its compensation deliberations. However, the 2010 EIP includes, and the 2020 Plan will include, various provisions designed to allow us to qualify stock options and other equity awards as "performance-based compensation" under Section 162(m), including a limitation on the maximum number of shares subject to awards that may be granted to an individual under the 2010 EIP or the 2020 Plan, as applicable, in any one year.

The LDCC seeks to balance the cost and benefit of tax deductibility with our executive compensation goals that are designed to promote long-term stockholder interest. Therefore, the LDCC may, in its discretion, authorize compensation payments that do not consider the deductibility limit imposed by Section 162(m) when it believes that such payments are appropriate to attract and retain executive talent and are in the best interests of the Company and our stockholders. Accordingly, we expect that a portion of our future cash compensation and equity awards to our executive officers will not be deductible under Section 162(m).

For example, with respect to the CEO Performance Option and CEO RSU described above, we expect that Mr. Melo will always be a covered employee for purposes of Section 162(m) of the Code. Thus, in any given year in which Mr. Melo exercises all or part of the CEO Performance Option, or vests and is settled in any portion of the CEO RSU, we may not be able to take a tax deduction for more than an aggregate of $1,000,000 attributable to Mr. Melo's compensation, including regarding compensation recognized by Mr. Melo from the exercise of the CEO Performance Option or settlement of the CEO RSU.

*Compensation Recovery Policy.* Other than with respect to the CEO Performance Option, as described above, we do not have a formal policy regarding adjustment or recovery of awards or payments if the relevant performance measures upon which they are based are restated or otherwise adjusted in a manner that would reduce the size of the award or payment. Under those circumstances, our Board or the LDCC would evaluate whether adjustments or recoveries of awards or payments were appropriate based upon the facts and circumstances surrounding the restatement or other adjustment. We anticipate that our Board will adopt a policy regarding restatements in the future based on anticipated SEC and Nasdaq regulations requiring listed companies to have a policy that requires repayment of incentive compensation that was paid to current or former executive officers in the three fiscal years preceding any restatement due to material noncompliance with financial reporting requirements. On March 19 2020, the LDCC approved the bonus funding for the 2019 annual period for all eligible employees, with a reduction of 50% from the applicable weighted average achievement. the LDCC's determinations were based on a review of the achievement of certain quarterly and

annual performance goals under the 2018 and 2019 cash bonus plans, specifically in light of the restatement of the Company's financial statements, as filed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

*Stock Ownership Policy.* We have not established stock ownership or similar guidelines with regard to our executive officers. All of our executive officers currently have a direct or indirect, through their stock option holdings, equity interest in our company and we believe that they regard the potential returns from these interests as a significant element of their potential compensation for services to us.

*Insider Trading Policy and Hedging Prohibition.* We have adopted an Insider Trading Policy that, among other things, prohibits our employees, officers and directors from trading in our securities while in possession of material, non-public information. In addition, under our Insider Trading Policy, our employees, officers and directors may not acquire, sell or trade in any interest or position relating to the future price of our securities (such as a put option, a call option or a short sale).

**Outstanding Equity Awards as of December 31, 2019**

The following table sets forth information regarding outstanding equity awards held by our named executive officers as of December 31, 2019.

| | Option Awards | | | | Stock Awards | |
|---|---|---|---|---|---|---|
| **Name** | **Number of Securities Underlying Unexercised Options (#) Exercisable** | **Number of Securities Underlying Unexercised Options (#) Unexercisable** | **Option Exercise Price ($/Sh)** | **Option Expiration Date** | **Number of Shares or Units of Stock That Have Not Vested (#)** | **Market Value of Shares or Units of Stock That Have Not Vested ($)[26]** |
| John Melo | 19,866[1][9] | — | 306.15 | 4/20/2020 | | |
| | 5,600[2][10] | — | 402.60 | 4/15/2021 | | |
| | 6,666[2][11] | — | 57.90 | 4/9/2022 | | |
| | 24,066[3][12] | — | 43.05 | 6/3/2023 | | |
| | 20,000[3][13] | — | 52.65 | 5/5/2024 | | |
| | 28,333[3][14] | — | 29.40 | 6/8/2025 | | |
| | 6,000[3][15] | — | 24.45 | 11/9/2025 | | |
| | 25,381[3][16] | 2,952[3][16] | 8.85 | 5/16/2026 | | |
| | 12,916[3][17][21] | 7,084[3][17][21] | 3.16 | 6/12/2027 | | |
| | — | 3,250,000[18] | 5.08 | 5/29/2028 | | |
| | 1,634[19] | 2,527[18] | 3.74 | 01/14/2029 | | |
| | | | | | 559,863[6][7][8][16][17][18][20][21] | 1,729,977 |
| Eduardo Alvarez | 30,000[5][22] | —[5][22] | 2.89 | 10/23/2027 | — | — |
| Kathleen Valiasek | 13,055[4][23] | 3,611[4][23] | 10.35 | 1/17/2027 | | |
| | 1,291[3][17] | 709[3][17] | 4.80 | 5/15/2027 | | |
| | 39,583 | 60,417[3][24] | 5.08 | 5/29/2028 | | |
| | | | | | 138,599[6][17][24][25] | 428,271 |

(1) These stock options vest as to 1/60th of the shares subject to the stock options each month from the vesting commencement date, which is a date fixed by the Board or LDCC when granting equity awards, until the fifth anniversary of the vesting commencement date, subject to continued service through each vesting date.

(2) These stock options vest as to 1/48th of the shares subject to the stock options each month from the vesting commencement date until the fourth anniversary of the vesting commencement date, subject to continued service through each vesting date.

(3) These stock options vest as to 1/4th of the shares subject to the stock options on the first anniversary of the vesting commencement date, and as to an additional 1/48th of the shares subject to the stock options each month thereafter until the fourth anniversary of the vesting commencement date, subject to continued service through each vesting date.

(4) These stock options vest as to 1/5th of the shares subject to the stock options on the six-month anniversary of the vesting commencement date, as to an additional 1/5th of the shares subject to the stock options vesting on the first anniversary of the vesting commencement date, and as to an additional 1/60th of the shares subject to the stock options each month thereafter until the fourth anniversary of the vesting commencement date, subject to continued service through each vesting date.

(5) These stock options vest as to 1/4th of the shares subject to the stock options on the first anniversary of the vesting commencement date, and as to an additional 1/16th of the shares subject to the stock options each month thereafter until the second anniversary of the vesting commencement date, subject to continued service through each vesting date.

(6) These RSUs vest as to 1/3rd of the units annually from the vesting commencement date until the third anniversary of the vesting commencement date, subject to continued service through each vesting date.

(7) These RSUs vest as to 1/4th of the units annually from the vesting commencement date until the fourth anniversary of the vesting commencement date, subject to continued service through each vesting date.

(8) These RSUs fully vest on October 1, 2019, subject to continued service through such date.

(9) The vesting commencement date of this award was April 20, 2010.

(10) The vesting commencement date of this award was January 1, 2011.

(11) The vesting commencement date of this award was April 1, 2012.

(12) The vesting commencement date of this award was April 1, 2013.

(13) The vesting commencement date of this award is April 1, 2014.

(14) The vesting commencement date of this award is June 8, 2015. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(15) The vesting commencement date of this award is November 1, 2015. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(16) The vesting commencement date of this award is May 1, 2016. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(17) The vesting commencement date of this award is May 1, 2017. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(18) These stock options are subject to performance-based vesting conditions and to acceleration of vesting in connection with a change of control. For more information regarding these stock options, please see above under "Executive Compensation — Compensation Discussion and Analysis — 2018 Compensation — Equity Awards — 2018 CEO Equity Awards — CEO Performance Option." Such stock options are also subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(19) These stock options vest as to 1/28th of the shares subject to the stock options vesting monthly from the vesting commencement date, subject to continued service through each vesting date. The vesting commencement date of this award is January 1, 2019. The award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(20) The vesting commencement date of this award is July 1, 2018. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(21) On May 11, 2017, Mr. Melo was granted an award of 1,220,000 RSUs and 780,000 stock options under the 2010 EIP, which inadvertently exceeded the Plan Limit. In June 2017, before the equity awards were issued to Mr. Melo, the LDCC rescinded and voided the entire award and granted grant new equity awards to Mr. Melo in compliance with the Plan Limit consisting of 20,000 stock options and 46,666 RSUs. In recognition of the value lost on the voiding of these awards, in January 2019 the Company paid a cash bonus of $185,320 to Mr. Melo and issued new equity awards to Mr. Melo consisting of 4,161 stock options and 38,616 RSUs.

(22) The vesting commencement date of this award is October 16, 2017. This award is subject to acceleration of vesting upon termination of employment, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(23) The vesting commencement date of this award is January 4, 2017. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(24) The vesting commencement date of this award is May 1, 2018. This award is subject to acceleration of vesting upon termination of employment in connection with a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(25) The vesting commencement date of this award is October 1, 2017. This award is subject to acceleration of vesting upon termination of employment, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

(26) Calculated by multiplying the number of units that had not vested as of December 31, 2019 by $3.09, the closing price of our common stock on the Nasdaq Global Select Market on December 31, 2019.

**Pension Benefits**

None of our named executive officers participates in, or has an account balance in, a qualified or non-qualified defined benefit plan sponsored by us.

**Potential Payments upon Termination and upon Termination Following a Change in Control**

In November 2013, the LDCC adopted the Amyris, Inc. Executive Severance Plan (the "Severance Plan"). The Severance Plan had an initial term of 36 months and thereafter will be automatically extended for successive additional one-year periods unless we provide six months' notice of non-renewal prior to the end of the applicable term. In May 2016, May 2017, February 2018 and February 2019, the LDCC reviewed the terms of the Severance Plan and elected to allow it to automatically renew upon the expiration of its initial term in November 2016 and renewal terms in November 2017 and November 2018, respectively. The LDCC adopted the Severance Plan to provide a consistent and updated severance framework for our executive officers that aligns with peer practices. All of our named executive officers, and all senior level employees of Amyris that are eligible to participate in the Severance Plan (or, collectively, the "participants"), have entered into participation agreements to participate in the Severance Plan. Generally, the payments and benefits under the Severance Plan supersede and replace any rights the participants have in connection with any change of control or severance benefits contained in such participants' employment offer letters, equity award agreements or any other agreement that specifically relates to accelerated vesting of equity awards; provided, that (i) our CEO is entitled to the rights and benefits provided for in the CEO Performance Option in connection with a

change of control of Amyris, as described above and (ii) in the event of any conflict between the terms of the CEO Performance Option and Mr. Melo's participation agreement or the Severance Plan relating to accelerated vesting of equity awards, the terms of the CEO Performance Option would govern and control.

Upon the execution of a participation agreement, the participants are eligible for the following payments and benefits under the Severance Plan.

Upon termination by us of a participant's employment other than for "cause" (as defined below) or the death or disability of the participant, or upon resignation by the participant of such participant's employment for "good reason" (as defined below) (collectively referred to as an "Involuntary Termination"), the participant becomes eligible for the following severance benefits:

- 12 months of base salary continuation (18 months for our CEO)
- 12 months of health benefits continuation (18 months for our CEO)

Upon an Involuntary Termination of a participant at any time within the period beginning three months before and ending 12 months after a change of control (as defined below) of the Company, the participant becomes eligible for the following severance payments and benefits:

- 18 months of base salary continuation (24 months for our CEO)
- 18 months of health benefits continuation (including for our CEO)
- Automatic acceleration of vesting and exercisability of all outstanding equity awards then held by the participant

In addition, as noted in the table below, Mr. Alvarez's participation agreement provides that in the event he undergoes an Involuntary Termination (whether or not in connection with a change of control), the vesting and exercisability of certain of his equity awards will accelerate.

In each case, the payments and benefits are contingent upon the participant complying with various requirements, including non-solicitation and confidentiality obligations to us, and on execution, delivery and non-revocation by the participant of a standard release of claims in favor of the Company within 60 days of the participant's separation from service (as defined in Section 409A of the Code). The payments and benefits are subject to forfeiture if, among other things, the participant breaches any of his or her obligations under the Severance Plan and related agreements. The payments and benefits are also subject to adjustment and deferral based on applicable tax rules relating to change-in-control payments and deferred compensation.

Under the Severance Plan, "cause" generally encompasses the participant's: (i) gross negligence or intentional misconduct; (ii) failure or inability to satisfactorily perform any assigned duties; (iii) commission of any act of fraud or misappropriation of property or material dishonesty; (iv) conviction of a felony or a crime involving moral turpitude; (v) unauthorized use or disclosure of the confidential information or trade secrets of Amyris or any of our affiliates that use causes material harm to Amyris; (vi) material breach of contractual obligations or policies; (vii) failure to cooperate in good faith with investigations; or (viii) failure to comply with confidentiality or intellectual property agreements. Prior to any determination that "cause" under the Severance Plan has occurred, we are generally required to provide notice to the participant specifying the event or actions giving rise to such determination and a 10-day cure period (30 days in the case of failure or inability to satisfactorily perform any assigned duties).

Under the Severance Plan, "good reason" generally means: (i) a material reduction of the participant's role at Amyris; (ii) certain reductions of base salary; (iii) a workplace relocation of more than 50 miles; or (iv) our failure to obtain the assumption of the Severance Plan by a successor. In order for a participant to assert good reason for his or her resignation, he or she must provide us written notice within 90 days of the occurrence of the condition and allow us 30 days to cure the condition. Additionally, if we fail to cure the condition within the cure period, the participant must terminate employment with us within 30 days of the end of the cure period.

Under the Severance Plan, a "change of control" will generally be deemed to occur if (i) Amyris completes a merger or consolidation after which Amyris's stockholders before the merger or consolidation do not own at least a majority of the outstanding voting securities of the acquiring or surviving entity after such

merger or consolidation, (ii) Amyris sells all or substantially all of its assets, (iii) any person or entity acquires more than 50% of Amyris's outstanding voting securities or (iv) a majority of Amyris's directors cease to be directors over any one-year period.

To the extent any severance benefits to a named executive officer constitute deferred compensation subject to Section 409A of the Code and such officer is deemed a "specified employee" under Section 409A, we will defer payment of such benefits to the extent necessary to avoid adverse tax treatment.

**Agreements with Executive Officers**

We do not have formal employment agreements with any of our named executive officers. The initial compensation of each named executive officer was set forth in an employment offer or promotion letter that we executed with such executive officer at the time his or her employment with us commenced (or at the time of her or his promotion, as the case may be). Each employment offer letter provides that the named executive officer's employment is "at will."

As a condition to their employment, our named executive officers entered into non-competition, non-solicitation and proprietary information and inventions assignment agreements. Under these agreements, each named executive officer has agreed (i) not to solicit our employees during her or his employment and for a period of 12 months after the termination of his or her employment, (ii) not to compete with us or assist any other person to compete with us during her or his employment, and (iii) to protect our confidential and proprietary information and to assign to us intellectual property developed during the course of his or her employment.

See above under "Executive Compensation — Potential Payments upon Termination and upon Termination Following a Change in Control" for a description of potential payments to our named executive officers upon termination of employment, including in connection with a change of control of the Company.

**Limitation of Liability and Indemnification**

Our Certificate of Incorporation limits the personal liability of directors for breach of fiduciary duty to the maximum extent permitted by the Delaware General Corporation Law ("DGCL"), and provides that no director will have personal liability to us or to our stockholders for monetary damages for breach of fiduciary duty or other duty as a director. However, these provisions do not eliminate or limit the liability of any of our directors for:

- any breach of the director's duty of loyalty to us or our stockholders;
- acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;
- voting or assenting to unlawful payments of dividends, stock repurchases or other distributions; or
- any transaction from which the director derived an improper personal benefit.

Any amendment to or repeal of these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to such amendment or repeal. If the DGCL is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the DGCL.

In addition, our Bylaws provide that we must indemnify our directors and officers to the fullest extent permitted by the DGCL, and we must advance expenses, including attorneys' fees, to our directors and officers, in connection with legal proceedings related to their status or service, subject to very limited exceptions.

We maintain an insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of the Board.

We have entered into indemnification agreements with each of our directors and executive officers that may be broader than the specific indemnification provisions contained in the DGCL. These indemnification

agreements require us, among other things, to indemnify our directors and executive officers against liabilities that may arise by reason of their status or service. These indemnification agreements also require us to advance all expenses incurred by the directors and executive officers in investigating or defending against any such action, suit or proceeding. We believe that these agreements are necessary to attract and retain qualified individuals to serve as directors and executive officers.

We are not presently aware of any pending litigation or proceeding involving any person who is or was one of our directors, officers, employees or other agents or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, for which indemnification is sought, and we are not aware of any threatened litigation that may result in claims for indemnification.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling our company pursuant to the foregoing provisions, policies and agreements, we have been informed that, in the opinion of the Securities and Exchange Commission, such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

## Director Compensation

Mr. Melo did not receive any compensation in connection with his service as a director due to his status as an employee of the company. The compensation that we pay to Mr. Melo is discussed in the "Executive Compensation" section of this Proxy Statement.

**Director Compensation for 2019**

During the fiscal year ended December 31, 2019, our non-employee directors who served during 2019 earned the compensation set forth below.

| Name | Fees Earned or Paid in Cash ($)(1) | Stock Awards ($)(2)(11) | Option Awards ($)(2)(11) | All Other Director Compensation ($) | Total ($)(12) |
|---|---|---|---|---|---|
| John Doerr | 49,000 | 8,452 | 9,674 | — | 67,126 |
| Geoffrey Duyk | 47,500 | 35,681 | 9,674 | — | 92,855 |
| Philip Eykerman(3) | 40,000 | 8,452 | 9,674 | — | 58,126 |
| Christoph Goppelsroeder(4) | 40,000 | — | — | — | 40,000 |
| Frank Kung(5) | 40,000 | 8,452 | 9,674 | — | 58,126 |
| Steven Mills | 52,500 | 8,452 | 9,674 | — | 70,626 |
| James McCann(6)(7) | 25,275 | 10,456 | 11,990 | | 47,721 |
| Carole Piwnica | 54,500 | 8,452 | 9,674 | — | 72,626 |
| Lisa Qi(8) | 25,275 | — | — | — | 25,275 |
| HH Sheikh Abdullah bin Khalifa Al Thani(9) | 14,725 | — | — | — | 14,725 |
| Christophe Vuillez(10) | 15,385 | — | — | — | 15,385 |
| R. Neil Williams | 70,000 | 8,452 | 9,674 | — | 88,126 |
| Patrick Yang | 45,000 | 8,452 | 9,674 | — | 63,126 |

(1) Reflects board, committee chair and committee member retainer fees earned during 2019.

(2) The amounts in the "Stock Awards" and "Option Awards" columns reflect the aggregate grant date fair value of such awards computed in accordance with FASB ASC Topic 718. The assumptions made in the valuation of the awards are discussed in Note 11, "Stock-based Compensation" of "Notes to Consolidated Financial Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019. These amounts do not correspond to the actual value that may be recognized by our non-employee directors.

(3) All cash compensation earned by Mr. Eykerman during 2019 was to be paid directly to DSM, which designated Mr. Eykerman to serve on our Board, and he did not receive any cash benefit from such payments.

(4) All cash compensation earned by Mr. Goppelsroeder during 2019 was to be paid directly to DSM, which designated Mr. Goppelsroeder to serve on our Board, and he did not receive any cash benefit from such payments. In addition, Mr. Goppelsroeder has to date declined each equity award granted to him pursuant to our non-employee director compensation program, without prejudice to future awards.

(5) All cash compensation earned by Dr. Kung during 2019 was to be paid directly to Vivo, which designated Dr. Kung to serve on our Board, and Dr. Kung did not receive any cash benefit from such payments. Pursuant to an agreement between Dr. Kung and Vivo, Dr. Kung has agreed, subject to certain conditions and exceptions, to remit the equity compensation he receives under our non-employee director compensation program to Vivo if and when such equity compensation becomes vested and/or exercised.

(6) Mr. McCann was appointed to our Board on May 14, 2019 and the fees earned by him in 2019 represent retainer fees earned for the portions of 2019 that he served on our Board.

(7) Upon joining our Board in May 2019, Mr. McCann received an initial award under the 2010 EIP of an option to purchase 750 shares of our common stock and 490 RSUs. This award was contemplated by our

non-employee director compensation program (described in "Narrative Disclosure to Director Compensation Tables" below). The stock option and RSU awards vested in full on August 1, 2019. The grant date fair value for these awards, as calculated under FASB ASC Topic 718, is as shown:

| Name | Date of Grant | Number of Shares of Stock or Units (#) | Number of Securities Underlying Options (#) | Exercise Price Per Share ($) | Stock Awards ($)[2] | Option Awards ($)[2] |
|---|---|---|---|---|---|---|
| James McCann . . . . . . . . . . . . . . | 5/20/2019 | — | 750 | 4.09 | — | 2,316 |
| James McCann . . . . . . . . . . . . . . | 5/20/2019 | 490 | — | — | 2,004 | — |

(8) Ms. Qi was appointed to our Board on May 14, 2019 and the fees earned by her in 2019 represent retainer fees earned for the portions of 2019 that she served on our Board. In addition, Ms. Qi has declined receiving any equity award pursuant to our non-employee director compensation program.

(9) HH Sheikh Abdullah bin Khalifa Al Thani resigned from our Board effective May 14, 2019, at which time all of his outstanding equity awards ceased vesting: all of his vested options remained exercisable for a period of three months after May 14, 2019, and all of his unvested options and RSUs were forfeited. In addition, the fees earned by him in 2019 represent retainer fees earned for the portions of 2019 that he served on our Board.

(10) All cash compensation earned by Mr. Vuillez during 2019 was to be paid directly to Total, which designated Mr. Vuillez to serve on our Board, and he did not receive any cash benefit from such payments. In addition, Mr. Vuillez has to date declined each equity award granted to him pursuant to our non-employee director compensation program, without prejudice to future awards. Mr. Vuillez resigned from our Board effective May 20, 2019 and the fees earned by him in 2019 represent retainer fees earned for the portions of 2019 that he served on our Board.

(11) In October 2019, each of our non-employee directors other than Mr. Goppelsroeder and Ms. Qi (and excluding the Board members who resigned from our Board in May 2019) received an annual award under the 2010 EIP of an option to purchase 3,466 shares of our common stock and 2,266 RSUs. These awards were contemplated by our non-employee director compensation program (described in "Narrative Disclosure to Director Compensation Tables" below). These option and RSU awards will vested in full on October 23, 2020 (subject to continued service through such date). The grant date fair value of these awards, as calculated under FASB ASC Topic 718, is as shown:

| Name | Date of Grant | Number of Shares of Stock or Units (#) | Number of Securities Underlying Options (#) | Exercise Price Per Share ($) | Stock Awards ($)[2] | Option Awards ($)[2] |
|---|---|---|---|---|---|---|
| John Doerr . . . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| John Doerr . . . . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| Geoffrey Duyk . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Geoffrey Duyk . . . . . . . . . . . . . | 10/23/2019 | 9,566 | — | — | 35,681 | — |
| Philip Eykerman . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Philip Eykerman . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| Frank Kung[5] . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Frank Kung[5] . . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| Steven Mills . . . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Steven Mills . . . . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| James McCann . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| James McCann . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| Carole Piwnica . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Carole Piwnica . . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| R. Neil Williams . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| R. Neil Williams . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |
| Patrick Yang . . . . . . . . . . . . . . | 10/23/2019 | — | 3,466 | 3.73 | — | 9,674 |
| Patrick Yang . . . . . . . . . . . . . . | 10/23/2019 | 2,266 | — | — | 8,452 | — |

(12) As of December 31, 2019, the non-employee directors who served during 2019 held the following outstanding equity awards:

| Name | Outstanding Options (Shares) | Outstanding Stock Awards (Units) |
|---|---|---|
| John Doerr | 13,731 | 2,266 |
| Geoffrey Duyk | 8,132 | 9,566 |
| Philip Eykerman | 11,665 | 2,932 |
| Christoph Goppelsroeder[(4)] | — | — |
| Frank Kung[(5)] | 9,932 | 2,932 |
| James McCann | 4,216 | 2,266 |
| Steven Mills | 6,932 | 2,266 |
| Carole Piwnica | 13,731 | 2,266 |
| Lisa Qi[(8)] | — | — |
| HH Sheikh Abdullah bin Khalifa Al Thani[(9)] | | |
| Christophe Vuillez[(10)] | — | — |
| R. Neil Williams | 12,931 | 2,266 |
| Patrick Yang | 12,531 | 2,266 |

**Narrative Disclosure to Director Compensation Tables**

Under our current non-employee director compensation program, in each case subject to final approval by our Board with respect to equity awards:

- Each non-employee director receives an annual cash retainer of $40,000 and an annual equity award consisting of an option to purchase 3,466 shares of our common stock and 2,266 RSUs, vesting in full after one year (in each case subject to continued service through the applicable vesting date). Any new Board members will receive a pro-rated annual equity award upon joining our Board, which award will vest in full on the one-year anniversary of the grant of the most recent annual Board equity awards.
- The non-executive Board chair, if any, receives an additional annual award of 7,300 RSUs. The award becomes fully vested after one year (subject to continued service through the applicable vesting date).
- The chair of the Audit Committee receives an additional annual cash retainer of $30,000.
- The chair of the LDCC receives an additional annual cash retainer of $10,000.
- The chair of the Nominating and Governance Committee receives an additional annual cash retainer of $9,000.
- Audit Committee, LDCC and Nominating and Governance Committee members other than the chair receive an additional annual cash retainer of $7,500, $5,000 and $4,500, respectively.

In general, all of the retainers described above are paid quarterly in arrears. In cases where a non-employee director serves for part of the year in a capacity entitling him or her to a retainer payment, the retainer is prorated to reflect his or her period of service in that capacity. Non-employee directors are also eligible for reimbursement of their expenses incurred in attending Board and committee meetings.

See “Proposal 4 — Approval of our 2020 Equity Incentive Plan” for specific limits on the amount of annual Director Compensation for non-employee directors.

## TRANSACTIONS WITH RELATED PERSONS

The following is a description of each transaction since the beginning of 2018, and each currently proposed transaction, in which:

- we have been or are to be a participant;
- the amount involved exceeds the lesser of $120,000 or 1% of the average of our total assets for the last two completed fiscal years; and
- any of our directors, executive officers or holders of more than 5% of any class of our capital stock at the time of the transactions in issue, or any immediate family member of or person sharing the household with any of these individuals, had or will have a direct or indirect material interest.

**Transactions with DSM**

*Value Sharing Agreement Amendments and Assignment*

In December 2017, in connection with the sale of our production facility located in Brotas, Brazil (the "Brotas Facility") to an affiliate of Koninklijke DSM N.V. ("DSM"), with which we have commercial and financial relationships and which owns greater than five percent of our outstanding common stock and has the right to designate two members of our Board of Directors, we entered into a value sharing agreement (the "Value Sharing Agreement") with DSM, pursuant to which DSM agreed to make certain royalty payments to us representing a portion of the profit on the sale of products produced using farnesene purchased under that certain Renewable Farnesene Supply Agreement, dated as of April 26, 2016 (as amended, the "Nenter Supply Agreement"), between us and Nenter & Co., Inc. ("Nenter"), realized by Nenter and paid to DSM in accordance with the Nenter Supply Agreement. In addition, pursuant to the Value Sharing Agreement, DSM agreed to guarantee certain minimum annual royalty payments for the first three calendar years of the Value Sharing Agreement, subject to future offsets in the event that the royalty payments to which we would otherwise have been entitled under the Value Sharing Agreement for such years fall below certain milestones. Under the Value Sharing Agreement, we are required to use certain value share payments received by us with respect to the first three calendar years of the Value Sharing Agreement in excess of the guaranteed minimum annual value share payments for such years, if any, to repay amounts outstanding under the Credit Agreement, dated as of December 28, 2017, between us and DSM.

During 2018, we and DSM amended the Value Sharing Agreement to (i) provide for the use of estimates in calculating quarterly value share payments (subject to true-up), (ii) modify how the guaranteed minimum annual value share payment for 2018 will be offset against value payments accruing during 2018 and (iii) accelerate the minimum annual value share payment for 2019 from December 31, 2018 to June 30, 2018 in exchange for a fee of $750,000.

On April 16, 2019, the Company assigned to DSM, and DSM assumed, all of the Company's rights and obligations under the Value Sharing Agreement, for aggregate consideration to the Company of $57.0 million, $29.1 million of which was paid to the Company in cash, with the remaining $27.9 million being used to pay certain existing obligations of the Company to DSM, including certain obligations under the Supply Agreement Amendment (as described below).

*Supply Agreement Amendments*

In December 2017, in connection with the sale of the Brotas Facility to DSM, we entered into a Supply Agreement (the "Supply Agreement") with DSM, pursuant to which DSM will supply us with certain products useful in our business that were previously, and are expected to continue to be, manufactured at the Brotas Facility, at prices and on production and delivery terms and specifications set forth in the Supply Agreement, which prices are based upon DSM's manufacturing cost plus an agreed margin. The Supply Agreement originally was set to expire (i) with respect to non-farnesene related products, on the date that our planned new manufacturing facility in Brazil is fully operational and meets its production targets, but in any event no later than December 31, 2021 and (ii) with respect to farnesene-related products, on December 28, 2037, subject in each case to earlier termination in certain circumstances.

On November 19, 2018, the Company and DSM entered into Amendment No. 1 to the Supply Agreement (the "Supply Agreement Amendment"), pursuant to which (i) the outside expiration date of the Supply Agreement with respect to non-farnesene related products was extended to December 31, 2022, with specified pricing terms added for products manufactured during 2022, (ii) DSM committed to produce certain non-farnesene related products for us for two months of each calendar year during the term of the Supply Agreement and (iii) we agreed to (A) pay DSM a cash reservation fee in the total amount of $17.3 million, payable in installments during 2018 and 2019, (B) issue 1,643,991 shares of our common stock to DSM (see below under "Securities Purchase Agreement" for more information) and (C) pay DSM a cash fee of $7.3 million, payable on or before March 29, 2019, plus, if the closing price of our common stock on the trading day immediately preceding the date of such payment is less than $4.41 per share, an amount equal to such deficiency multiplied by 1,643,991.

On April 16, 2019, the Company and DSM entered into a second amendment to the Supply Agreement, as well as amendments to the Performance Agreement and the Quota Purchase Agreement entered into in connection with the December 2017 sale of the Brotas Facility to DSM, pursuant to which (i) DSM agreed to reduce certain manufacturing costs and fees paid by the Company related to the production of farnesene under the Supply Agreement through 2021, as well as remove the priority of certain customers over the Company with respect to production capacity at the Brotas Facility, (ii) the Company agreed to provide DSM rights to conduct certain process and downstream recovery improvements under the Performance Agreement at facilities other than the Brotas Facility in exchange for DSM providing the Company with a license to such improvements and (iii) the Company released DSM from its obligation to provide manufacturing and support services under the Quota Purchase Agreement in connection with the Company's planned new manufacturing facility, which is no longer planned to be located at the Brotas, Brazil location. On September 30, 2019, the Company and DSM further amended the 2017 Supply Agreement with regard to payment obligations, including to reduce the deadline for the Company to pay undisputed invoice amounts and to grant DSM the option to suspend its obligations under the 2017 Supply Agreement upon certain payment defaults by the Company. On February 24, 2020, the Company and DSM further amended the Quota Purchase Agreement with regard to the payment of certain tax benefits to the parties.

*Securities Purchase Agreement*

On November 20, 2018, we issued 1,643,991 shares of our common stock (the "DSM Shares") to DSM in a private placement pursuant to a securities purchase agreement, dated November 19, 2018, between us and DSM (the "DSM SPA"), in consideration of certain agreements of DSM set forth in the DSM Supply Agreement Amendment. Pursuant to the DSM SPA, we agreed to file a registration statement providing for the resale by DSM of the DSM Shares and to use commercially reasonable efforts to (i) cause such registration statement to become effective within 181 days following the date of the DSM SPA and (ii) keep such registration statement effective until DSM does not own any DSM Shares or the DSM Shares are eligible for resale under Rule 144 without regard to volume limitations.

*Letter Agreement*

On November 19, 2018, we entered into a letter agreement (the "Letter Agreement") with DSM, pursuant to which, in consideration of the agreements of DSM set forth in the Supply Agreement Amendment, we agreed (i) to cause the removal of certain existing liens on intellectual property owned by us and licensed to DSM (the "Subject Intellectual Property") and (ii) if such liens were not removed prior to December 15, 2018, to issue to DSM shares of our common stock with a value equal to $5,000,000. As a result of the entry into an amendment to our senior secured credit facility on December 14, 2019 to remove the Subject Intellectual Property from the lien granted by us thereunder, we satisfied our obligations under the Letter Agreement, and therefore we were not required to issue shares of our common stock (or otherwise make payment) to DSM pursuant to the Letter Agreement.

*Brotas Facility Purchase Price Adjustment Letter*

On November 19, 2018, we entered into a letter agreement with DSM, pursuant to which we agreed to make a cash payment to DSM of $1.8 million in respect of an adjustment to the purchase price for certain

assets sold by us to DSM in connection with sale of the Brotas Facility in December 2017 and related transactions pursuant to the terms of the agreements related to such sale.

*Supply Agreement Payment Letter*

In November 2018, we entered into a letter agreement with DSM, pursuant to which we agreed to make a cash payment to DSM of $0.6 million in respect of certain agreements by DSM to allocate production capacity at the Brotas Facility in 2018 under the Supply Agreement.

*Credit Agreement*

On September 17, 2019, the Company and DSM entered into a credit agreement (the "2019 DSM Credit Agreement") to make available to the Company a secured credit facility in an aggregate principal amount of $8.0 million, to be issued in separate installments of $3.0 million, $3.0 million and $2.0 million, respectively, with each installment being subject to certain closing conditions, including the payment of certain existing obligations of the Company to DSM. On September 17, 2019, the Company borrowed the first installment of $3.0 million under the 2019 DSM Credit Agreement, all of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $3.0 million. On September 19, 2019, the Company borrowed the second installment of $3.0 million under the 2019 DSM Credit Agreement, all of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $3.0 million. On September 23, 2019, the Company borrowed the final installment of $2.0 million under the 2019 DSM Credit Agreement, $1.5 million of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $2.0 million. The promissory notes issued under the 2019 DSM Credit Agreement (i) mature on August 7, 2022, (ii) accrue interest at a rate of 12.5% per annum from and including the applicable date of issuance, which interest is payable quarterly in arrears on each January 1, April 1, July 1 and October 1, beginning January 1, 2020, and (iii) are secured by a first-priority lien on certain Company intellectual property licensed to DSM. The Company may at its option repay the amounts outstanding under the 2019 DSM Credit Agreement before the maturity date, in whole or in part, at a price equal to 100% of the amount being repaid plus accrued and unpaid interest on such amount to the date of repayment. In addition, the Company is required to repay the amounts outstanding under the 2019 DSM Credit Agreement (i) in an amount equal to the gross cash proceeds, if any, received by the Company upon the exercise by DSM of certain common stock purchase warrants issued by the Company to DSM in 2017 and (ii) in full upon the request of DSM at any time following the receipt by the Company of at least $50.0 million of gross cash proceeds from one or more sales of equity securities of the Company on or prior to June 30, 2020.

*Commercial Transactions*

In July and September 2017, we entered into three separate collaboration agreements with DSM (the "DSM Collaboration Agreements") to jointly develop three new molecules in the Health and Nutrition field (the "DSM Ingredients") using our technology, which we would produce and DSM would commercialize. Pursuant to the DSM Collaboration Agreements, DSM will, subject to certain conditions, provide funding for the development of the DSM Ingredients and, upon commercialization, the parties would enter into supply agreements whereby DSM would purchase the applicable DSM Ingredients from us at prices agreed by the parties. The development activities will be directed by a joint steering committee with equal representation by DSM and us. In addition, the parties will share product margin from DSM's sales of products that incorporate the DSM Ingredients subject to the DSM Collaboration Agreements.

In June 2018, we and DSM amended and restated one of the DSM Collaboration Agreements to more clearly define the research and development funding responsibility, amounts and criteria under the agreement. Pursuant to the amended agreement, DSM agreed to fund additional research and development costs upon the achievement of certain milestones, and would then recoup a portion of such funding through a reduction in the royalty percentage paid by DSM to us (once products subject to the agreement have been commercialized) until such amount is recouped by DSM, at which point the royalty percentage would return to its previous level.

In 2019, we recognized $53.2 million in revenue relating to agreements and transactions with DSM, including those described above, and held $1.1 million in accounts receivable as well as $1.2 million of unbilled receivables and $3.3 million of contingent consideration receivable from DSM as of December 31, 2019.

**Transactions with Foris**

*August 2018 Warrant Transaction*

On August 17, 2018, we entered into warrant exchange agreements (the "Warrant Exchange Agreements") with Foris Ventures, LLC ("Foris"), an entity affiliated with director John Doerr of Kleiner Perkins Caufield & Byers, a current stockholder, and an owner of greater than five percent of our outstanding common stock, and affiliates of Vivo Capital LLC (collectively, "Vivo"), an entity affiliated with director Frank Kung and which owns greater than five percent of our outstanding common stock and has the right to designate one member of our Board of Directors, pursuant to which Foris and Vivo agrees to exercise certain of their common stock purchase warrants issued in May 2017 and August 2017, respectively (the "Prior Cash Warrants"), representing an aggregate of 10,452,504 shares, in full for cash and (ii) surrender certain other of their common stock purchase warrants issued in May 2017 and August 2017, respectively (the "Prior Dilution Warrants"), in the case of Foris after exercising such warrant in full for 2,106,217 shares, to us for cancellation, and in exchange we agreed to issue to Foris and Vivo new warrants (the "New Warrants") to purchase an aggregate of 12,097,164 shares of our common stock in a private placement, with the New Warrants having substantially identical terms as the Prior Cash Warrants, except that (A) the expiration date of the New Warrants would be 21 months after issuance (in comparison to the five-year term of the Prior Cash Warrants), (B) the New Warrants would not contain any anti-dilution protection (in comparison to the full-ratchet anti-dilution protection provided in Prior Cash Warrants), other than standard adjustments in the event of any dividends or distributions on our Common Stock, or any stock split, reverse stock split, recapitalization, reorganization or similar transaction, (C) the New Warrants would only permit exercise after the six-month anniversary of issuance, and would only permit "cashless" or "net" exercise after the twelve-month anniversary of issuance to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the New Warrants and (D) the exercise price of the New Warrants would be $7.52 per share (in comparison to $4.40 per share for the Prior Cash Warrants), subject to adjustment. In connection with the entry into the Warrant Exchange Agreements, we entered into amendments to the Prior Cash Warrants and Prior Dilution Warrants with Foris and Vivo to (i) in the case of Foris, remove a beneficial ownership limitation from such warrants and (ii) in the case of Vivo, remove a beneficial ownership limitation from such warrants and reduce the exercise price of Vivo's Prior Cash Warrants from $6.39 per share to $4.40 per share (the "Warrant Exchange").

In connection with the Warrant Exchange, on August 17, 2018, we entered into an underwriting agreement (the "Underwriting Agreement") with B. Riley FBR, Inc. (the "Underwriter"), Foris and Vivo relating to the sale of up to an aggregate of 8,802,270 shares of our common stock by Foris and Vivo, including the shares issuable to the Foris upon the exercise of its Prior Cash Warrants (the "Secondary Offering"). The price to the public in the Secondary Offering was $6.25 per share, and the Underwriter agreed to purchase the shares of common stock from Vivo and Foris to be sold in the Secondary Offering at a price of $6.22 per share. The Secondary Offering closed on August 21, 2018; we did not receive any proceeds from the Secondary Offering, but agreed to pay certain offering expenses, as well as a structuring and advisory fee to the Underwriter equal to 4.5% of the gross proceeds of the Secondary Offering. At the closing of the Secondary Offering and the concurrent settlement of the Warrant Exchange, we received proceeds of approximately $43 million.

*Loan and Security Agreement*

On April 15, 2019, the Company, GACP Finance Co., LLC ("GACP") and Foris entered into a Loan Purchase Agreement, pursuant to which Foris agreed to purchase and assume from GACP, and GACP agreed to sell and assign to Foris, the outstanding loans under the Loan and Security Agreement, dated June 29, 2018, as amended (the "LSA"), among the Company, certain subsidiaries of the Company and GACP, and all documents and assets related thereto. In connection with such purchase and assignment, the Company agreed to repay Foris $2.5 million of the purchase price paid by Foris to GACP (the "Company LPA Obligation"). The closing of the loan purchase and assignment occurred on April 16, 2019.

On August 14, 2019, the Company and Foris entered into an Amendment No 5 and Waiver to the LSA (the "LSA Amendment and Waiver"), pursuant to which (i) the maturity date of the loans under the LSA was extended from July 1, 2021 to July 1, 2022, (ii) the interest rate for the loans under the LSA was modified from the sum of (A) the greater of (x) the prime rate as reported in the Wall Street Journal or (y) 4.75% plus (B) 9% to the greater of (A) 12% or (B) the rate of interest payable with respect to any indebtedness of the Company, (iii) the amortization of the loans under the LSA was delayed until December 16, 2019, (iv) certain accrued and future interest and agency fee payments under the LSA were delayed until December 16, 2019, (v) certain covenants under the LSA, including related definitions, were amended to provide the Company with greater operational and financial flexibility, including, without limitation, to permit the incurrence of the indebtedness under the Naxyris Loan Facility (as described below) and the granting of liens with respect thereto, subject to the terms of an intercreditor agreement between Foris and Naxyris S.A. ("Naxyris") governing the respective rights of the parties with respect to, among other things, the assets securing the Naxyris Loan Agreement and the LSA (the "Intercreditor Agreement"), (vi) certain outstanding unsecured promissory notes issued by the Company to Foris on April 8, 2019, June 11, 2019, July 10, 2019 and July 26, 2019 (as described below under "Foris Credit Agreements"), in an aggregate principal amount of $32.5 million, as well as the Company LPA Obligation, were added to the loans under the LSA, made subject to the LSA and secured by the security interest in the collateral granted to Foris under the LSA, and such promissory notes and contractual obligation were cancelled in connection therewith, and (vii) Foris agreed to waive certain existing defaults under the LSA, including with respect to covenants related to quarterly minimum revenues, minimum liquidity amounts and a minimum asset coverage ratio. After giving effect to the LSA Amendment and Waiver, there is $71.0 million aggregate principal amount of loans outstanding under the LSA. In connection with the entry into the LSA Amendment and Waiver, on August 14, 2019 the Company issued to Foris a warrant to purchase up to 1,438,829 shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. Pursuant to the terms of the warrant, Foris may not exercise the warrant to the extent that, after giving effect to such exercise, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding after giving effect to such exercise, unless the Company has obtained stockholder approval to exceed such limit in accordance with Nasdaq rules and regulations, which the Company obtained at the 2019 annual meeting of stockholders.

On October 10, 2019, the Company and Foris entered into Amendment No. 6 to the LSA (the October 2019 LSA Amendment), pursuant to which the maximum loan commitment of Foris under the LSA was increased by $10.0 million. On October 11, 2019, the Company borrowed an additional $10.0 million from Foris under the LSA (the October 2019 LSA Loan), which is subject to the terms and provisions of the LSA, including the lien on substantially all the assets of the Company. After giving effect to the LSA Loan, there was $81.0 million aggregate principal amount of loans outstanding under the LSA. Also, in connection with the October 2019 LSA Amendment, the Company issued a warrant (the October 2019 Foris LSA Warrant) to purchase up to 2.0 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance.

On October 28, 2019, the Company and Foris entered into an amended and restated LSA (the A&R LSA), pursuant to which, among other things, certain covenants and related definitions were amended to permit the incurrence of the indebtedness under the October 2019 Naxyris Loan (as defined below), subject to the terms of an amended and restated intercreditor agreement, dated October 28, 2019, between Foris and Naxyris governing the respective rights of the parties with respect to, among other things, the assets securing the A&R Naxyris LSA (as defined below) and the A&R LSA, and additional covenants were added relating to, among other things, maintenance of intellectual property, compliance with laws, delivery of reports and repayment of indebtedness.

On November 27, 2019, the Company borrowed an additional $10.0 million from Foris under the A&R LSA dated October 28, 2019. The new loan has identical terms to the previous loans under the LSA except that the maturity date is March 31, 2023 (as opposed to July 1, 2022 for the other loans under the LSA). In connection with the new loan, the Company issued a warrant to purchase up to 1,000,000 shares of common stock at an exercise price of $3.87 per share, exercisable for a period of two years from issuance (the November 2019 Foris Warrant). After giving effect to the LSA Loan, there was $91.0 million aggregate principal amount of loans outstanding under the A&R LSA.

*Foris Credit Agreements*

On April 8, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $8.0 million (the April Foris Credit Agreement), which the Company borrowed in full on April 8, 2019 and issued to Foris a promissory note in the principal amount of $8.0 million (the April Foris Note). The April Foris Note has a maturity date of October 14, 2019. In connection with the entry into the April Foris Credit Agreement and the issuance of the April Foris Note, which has no stated interest rate, the Company agreed to pay Foris a fee of $1.0 million, payable on or prior to the maturity date of the April Foris Note (the April Foris Note Fee); provided, that the April Foris Note Fee would be reduced to $0.5 million if the Company repaid the April Foris Note in full by July 15, 2019.

On June 11, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $8.5 million, which the Company borrowed in full on June 11, 2019 and issued to Foris a promissory note in the principal amount of $8.5 million (the June Foris Note). The June Foris Note (i) accrues interest at a rate of 12.5% per annum from and including June 11, 2019, which interest is payable on the maturity date or the earlier repayment or other satisfaction of the June Foris Note, and (ii) matures on August 28, 2019; provided, that if certain warrants held by DSM are exercised, then the maturity date of the June Foris Note will be the business day immediately following such exercise.

On July 10, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $16.0 million (the July Foris Credit Agreement), of which the Company borrowed $8.0 million on July 10, 2019 and $8.0 million on July 26, 2019 and issued to Foris promissory notes, each in the principal amount of $8.0 million, on such dates (the July Foris Notes). The July Foris Notes (i) accrue interest at a rate of 12.5% per annum from and including the respective date of issuance, which interest is payable on the maturity date or the earlier repayment or other satisfaction of the applicable July Foris Note, and (ii) mature on December 31, 2019. In connection with the entry into the July Foris Credit Agreement, the Company and Foris amended the New Warrant issued to Foris on August 17, 2018 (see above under "August 2018 Warrant Transaction") to reduce the exercise price of such warrant from $7.52 per share to $2.87 per share.

The Company may at its option repay the amounts outstanding under the April Foris Note (including the April Foris Note Fee), the June Foris Note and the July Foris Notes before their respective maturity dates, in whole or in part, at a price equal to 100% of the amount being repaid plus, in the case of the June Foris Note and the July Foris Notes, accrued and unpaid interest on such amount to the date of repayment.

On August 14, 2019, the April Foris Note, the June Foris Note and the July Foris Notes were added to the loans under the LSA, made subject to the LSA and secured by the security interest in the collateral granted to Foris under the LSA, and such notes were cancelled in connection therewith. See above under "Loan and Security Agreement" for additional information.

On August 28, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $19.0 million (the August Foris Credit Agreement), which the Company borrowed in full on August 28, 2019 and issued to Foris a promissory note in the principal amount of $19.0 million (the August Foris Note). The August Foris Note (i) accrues interest at a rate of 12% per annum from and including August 28, 2019, which interest is payable quarterly in arrears on each March 31, June 30, September 30 and December 31, beginning December 31, 2019, and (ii) matures on January 1, 2023. The Company may at its option repay the amounts outstanding under the August Foris Note before the maturity date, in whole or in part, at a price equal to 100% of the amount being repaid plus accrued and unpaid interest on such amount to the date of repayment.

In connection with the entry into the August Foris Credit Agreement, on August 14, 2019 the Company issued to Foris a warrant to purchase up to 4,871,795 shares of common stock at an exercise price of $3.90 per share, with an exercise term of two years from issuance in a private placement pursuant to the exemption from registration under Section 4(a)(2) of the Securities Act and Regulation D promulgated under the Securities Act. The exercise price of the warrant is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month anniversary

of issuance of the applicable warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, Foris may not exercise the warrant to the extent that, after giving effect to such exercise, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding after giving effect to such exercise, unless the Company has obtained stockholder approval to exceed such limit in accordance with Nasdaq rules and regulations, which the Company obtained at the 2019 annual meeting of stockholders.

*2019 Private Placements*

On April 16, 2019, the Company sold and issued to Foris 6,732,369 shares of common stock at a price of $2.87 per share, as well as a warrant to purchase up to 5,424,804 shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance, in a private placement pursuant to the exemption from registration under Section 4(a)(2) of the Securities Act and Regulation D promulgated under the Securities Act, for aggregate cash proceeds to the Company of $20.0 million.

On April 26, 2019, the Company sold and issued to Foris 2,832,440 shares of common stock at a price of $5.12 per share, as well as a warrant to purchase up to 3,983,230 shares of common stock at an exercise price of $5.12 per share, with an exercise term of two years from issuance, in a private placement pursuant to the exemption from registration under Section 4(a)(2) of the Securities Act and Regulation D promulgated under the Securities Act, for aggregate cash proceeds to the Company of $15.0 million. On August 28, 2019, in connection with the entry into the August Foris Credit Agreement (as described above under "Foris Credit Agreements"), the Company and Foris amended the warrant issued to Foris on April 26, 2019 to reduce the exercise price of such warrant from $5.12 per share to $3.90 per share.

The exercise price of the warrants issued in the foregoing private placements is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month anniversary of issuance of the applicable warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, in connection with the foregoing private placements, the Company agreed not to effect any exercise or conversion of any Company security, and Foris agreed not to exercise or convert any portion of any Company security, to the extent that after giving effect to such exercise or conversion, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding immediately after giving effect to such exercise or conversion, and the warrants contained a similar limitation. The Company obtained stockholder approval for Foris to exceed such limitation in accordance with Nasdaq rules and regulations at the 2019 annual meeting of stockholders.

*Convertible Note Exchange*

On May 14, 2019, the Company exchanged $5.0 million aggregate principal amount of its 6.50% Convertible Senior Notes due 2019 held by Foris, including accrued and unpaid interest thereon up to, but excluding, May 15, 2019, for 1,122,460 shares of common stock and a warrant to purchase up to 352,638 shares of common stock at an exercise price of $4.56 per share, with an exercise term of two years from issuance, in a private exchange pursuant to the exemption from registration under Section 3(a)(9) of the Securities Act. On August 28, 2019, in connection with the entry into the August Foris Credit Agreement (as described above under "Foris Credit Agreements"), the Company and Foris amended the warrant issued to Foris on May 14, 2019 to reduce the exercise price of such warrant from $4.56 per share to $3.90 per share. The exercise price of the warrant issued in the foregoing exchange is subject to standard adjustments but does not contain any anti-dilution protection, and the warrant only permits "cashless" or "net" exercise after the six-month anniversary of the exercisability of such warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying such warrant. In addition, the exercisability of such warrant is subject to stockholder approval in accordance with Nasdaq rules and regulations, which the Company obtained at the 2019 annual meeting of stockholders.

*Series B Preferred Stock Agreement*

On October 23, 2019, Amyris and Foris signed an agreement (the "Agreement") to amend the Certificate of Designation of Preferences, Rights and Limitations relating to the Series B Preferred Stock (the "Certificate

of Designation") relating to its Series B 17.38% Convertible Preferred Stock, to remove the existing beneficial ownership limitation with respect to conversion of the Series B Preferred Stock of 4.99% of Amyris's outstanding common stock (which could be increased by the holders of the Series B Preferred Stock to 9.99% upon at least 61 days' notice) (the "Beneficial Ownership Limit"). As of the date of the agreement, the sole holder of the Series B Preferred Stock was Foris, which held 6,376.2787 shares of Series B Preferred Stock (convertible into 1,012,071 shares of common stock), the automatic conversion of which was being held in abeyance since October 2017 due to Foris' beneficial ownership of Amyris common stock. On October 23, 2019, the Board approved the Certificate of Amendment, which was filed with the Delaware Secretary of State, subsequently effecting the conversion of the shares of Series B Preferred Stock held by Foris into common stock.

*Warrants Exercises for Cash*

On January 13, 2020, Foris delivered to the Company an irrevocable notice of cash exercise with respect to a warrant to purchase 4,877,386 shares of the Company's common stock, issued by the Company on August 17, 2018 (the Warrant Exercise). On January 14, 2020, the Company received approximately $14.0 million from Foris in connection with the Warrant Exercise representing 4,877,386 shares of common stock at an exercise price of $2.87 per share.

On March 11, 2020, Foris provided to the Company a notice of cash exercise to purchase 5,226,481 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to the PIPE Rights (as defined below) issued by the Company on January 31, 2020. On March 12, 2020, the Company received approximately $15.0 million from Foris in connection with the PIPE Rights exercise. Foris agreed to receive the PIPE shares after the Company obtains shareholder approval to increase its authorized capital stock pursuant to Proposal 6.

*Warrant Amendments and Exercises*

On January 31, 2020, the Company entered into separate warrant amendment agreements (the Warrant Amendments) with Foris and with certain other holders (the Holders) of the Company's outstanding warrants to purchase shares of the Company's common stock, pursuant to which the exercise price of certain warrants (the Amended Warrants) held by the Holders and Foris was reduced to $2.87 per share upon the exercise of the Amended Warrant.

On January 31, 2020, the Company and Foris entered into a warrant exercise agreement (the Exercise Agreement) pursuant to which (i) Foris agreed (A) to exercise all of its outstanding common stock purchase warrants (the Foris Warrants), currently exercisable for an aggregate of 19,287,780 shares of Common Stock (the Foris Warrant Shares), at a weighted average exercise price of approximately $2.84 per share (following the Warrant Amendments) and with an aggregate exercise price of $54.8 million (the Exercise Price), and (B) to purchase 5,279,171 shares of Common Stock (the Foris Shares), at $2.87 per share for a total purchase price of $15.2 million (Purchase Price), (ii) Foris agreed to pay the Exercise Price and the Purchase Price through the cancellation of $70 million owed by the Company to Foris under the Foris $19 Million Note and the Foris LSA (as discussed in Note 4, "Debt") and (iii) the Company agreed to issue to Foris the Foris Shares and an additional right to purchase 8,778,230 shares of Common Stock at a purchase price of $2.87 per share, for a period of 12 months from the Exercise Agreement (the "Foris Rights"). The resale of the Foris Warrant Shares was registered pursuant to the Company's Registration Statement.

*2020 Private Placement*

On January 31, 2020 the Company entered into separate Security Purchase Agreements (the "2020 SPAs") with certain accredited investors (the "Investors"), including Foris, for the issuance and sale of an aggregate of 8,710,802 shares of Common Stock (the "PIPE Shares") and rights to purchase an aggregate of 8,710,802 shares of Common Stock at a purchase price of $2.87 per share, for a period of 12 months from the Closing (as defined below) (the "PIPE Rights"), for an aggregate purchase price of $25 million (the "Offering"). The closing of the Offering (the "Closing") occurred on February 4, 2020. At the Closing, the Company received aggregate cash proceeds of $25 million upon issuance of the PIPE Shares and the PIPE Rights. The Purchase

Agreements include customary representations, warranties and covenants of the parties. The Company intends to use the proceeds from the Offering for working capital and other general corporate purposes, including the repayment of indebtedness.

**Transactions with Total**

*R&D Note Amendments*

On March 21, 2016, in connection with the restructuring of the ownership and rights of Total Amyris BioSolutions B.V. ("TAB"), the joint venture between us and Total Raffinage Chimie (together with its affiliates, "Total"), with which we have a commercial and financial relationship and which owns greater than five percent of our outstanding common stock and has the right to designate one member of our Board of Directors, we issued to Total a 1.5% Senior Unsecured Convertible Note (RS-10) (as amended, the "R&D Note") in the principal amount of $3.7 million. The R&D Note was previously amended in February and May 2017.

On March 30, 2018, we entered into a third amendment to the R&D Note with Total, pursuant to which (i) the maturity date of the R&D Note was extended from March 31, 2018 to May 31, 2018 and (ii) accrued and unpaid interest on the amounts outstanding under the R&D Note would be payable on March 31, 2018 and May 31, 2018.

On May 31, 2018, we entered into a fourth amendment to the R&D Note with Total, pursuant to which (i) the maturity date of the R&D Note was extended from May 31, 2018 to July 2, 2018 and (ii) accrued and unpaid interest on the amounts outstanding under the R&D Note would be payable on May 31, 2018 and July 2, 2018.

*Tranche II Note Letter Agreement*

In November 2018, Total converted its Tranche II Senior Convertible Note (the "Tranche II Note"), which was issued by us to Total in January 2014, and which was scheduled to mature on January 15, 2019, into shares of common stock in accordance with the terms of the Tranche II Note. In connection with such conversion, we entered into a letter agreement with Total, pursuant to which we agreed to pay Total future interest on the Tranche II Note being converted up to, but excluding, the maturity date for such note, which interest was converted by Total into common stock at the conversion price for the Tranche II Notes.

*Convertible Note Exchange and Extensions*

On May 15, 2019, the Company exchanged $9.7 million aggregate principal amount of its 6.50% Convertible Senior Notes due 2019 held by Total for a new senior convertible note with an equal principal amount and with substantially identical terms, except that the new note had a maturity date of June 14, 2019, in a private exchange pursuant to the exemption from registration under Section 3(a)(9) of the Securities Act. Effective June 14, 2019, the Company and Total agreed to extend the maturity date of the New Note from June 14, 2019 to July 18, 2019. Effective July 18, 2019, the Company and Total agreed to (i) further extend the maturity date of the New Note from July 18, 2019 to August 28, 2019 and (ii) increase the interest rate on the New Note to 10.5% per annum, beginning July 18, 2019. Effective August 28, 2019, the Company and Total agreed to (i) further extend the maturity date of the New Note from August 28, 2019 to October 28, 2019 and (ii) increase the interest rate on the New Note to 12% per annum, beginning August 28, 2019. On October 31, 2019, the Company and Total agreed, effective as of October 28, 2019, to (i) extend the maturity date of the New Note from October 28, 2019 to December 16, 2019 and (ii) capitalize all interest accruing under the New Note from May 15, 2019 through and including November 14, 2019, in the amount of $0.5 million, which interest would be added to the principal of the New Note, which would begin accruing interest on such new principal amount on November 15, 2019. Effective December 16, 2019, the Company and Total agreed to extend the maturity date of the New Note from December 16, 2019 to January 31, 2020. Effective January 31, 2020, the Company and Total agreed to extend the maturity date of the New Note from January 31, 2020 to March 31, 2020 and the Company paid Total $1.5 million to satisfy all accrued but unpaid interest and to reduce the principal balance of the reissued note by $1.1 million.

*Commercial Transactions*

In October 2016, we entered into an assistance agreement with the United States Department of Energy relating to a research grant award under which we, with the assistance of two specialized subcontractors, including Total, will work to develop a manufacturing-ready process utilizing wood as the cellulosic feedstock to produce farnesene. The program that is the subject of the award is being performed and funded on a milestone basis. Under the award, we and our subcontractors could collectively receive reimbursement for up to $7.0 million in costs expended by us and our subcontractors over the program's three year term if all of the program's milestones are achieved. In April 2017, we entered into a Master Subrecipient Agreement with Total in connection with the grant award (the "Master Subrecipient Agreement"), pursuant to which Total would perform certain services in connection with the program and would be reimbursed for such services, up to a maximum amount of approximately $350,000. In March 2018, we and Total amended the Master Subrecipient Agreement to reflect the extension of the program through the end of 2018.

In May 2018, we and Total entered into an agreement to terminate, effective April 30, 2018, Total's sublease of certain space in our pilot plants, which sublease was scheduled to expire in April 2019, pursuant to which Total agreed to pay us $62,000 to satisfy its remaining obligations under the sublease and we agreed to purchase from Total certain laboratory equipment located in the subleased premises for a purchase price of $0.5 million.

In July 2018, we and Total entered into an agreement to terminate, effective May 31, 2018, the Pilot Plant Services Agreement, dated April 4, 2014, as amended, between us and Total, pursuant to which we provided Total with fermentation and downstream separation scale-up services and training to Total employees and which was scheduled to expire in April 2019. In accordance with the terms of the Pilot Plant Services Agreement, no payments were due by either party in connection with the termination.

We engage in sales of our products to Total (including Total Amyris BioSolutions B.V., the joint venture between us and Total) in the ordinary course of our business. In 2019, we made product sales to Total of $46,000 and held no accounts receivable from Total as of December 31, 2019.

**Transactions with Vivo**

See above under "August 2018 Warrant Transaction".

On April 29, 2019, the Company sold and issued to Vivo 913,529 shares of common stock at a price of $4.76 per share, as well as warrants to purchase up to an aggregate of 1,212,787 shares of common stock at an exercise price of $4.76 per share, with an exercise term of two years from issuance, in a private placement pursuant to the exemption from registration under Section 4(a)(2) of the Securities Act and Regulation D promulgated under the Securities Act, for aggregate cash proceeds to the Company of $4.5 million. The exercise price of the warrants issued in the foregoing private placement is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month anniversary of issuance, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, in connection with the foregoing private placement, the Company agreed not to effect any exercise or conversion of any Company security, and Vivo agreed not to exercise or convert any portion of any Company security, to the extent that after giving effect to such exercise or conversion, Vivo, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding immediately after giving effect to such exercise or conversion, and the warrants contained a similar limitation.

**Reinach Consulting Agreement**

In November 2018, we entered into a consulting agreement, effective August 1, 2018, with Fernando Reinach, a former director who resigned from our Board effective August 1, 2018 (the "Reinach Consulting Agreement"). Pursuant to the Reinach Consulting Agreement, Dr. Reinach agreed to perform certain consulting services relating to our operations in Brazil for a period of three (3) years, including serving as a member of our advisory panel, and was appointed to a one (1)-year term on such panel by our Board of Directors in November 2018. As compensation for such services, Dr. Reinach was granted an award of 203,804 RSUs under the 2010 EIP, which award vests as to 1/3$^{rd}$ of the units annually from August 1, 2018, subject to

continued service through each vesting date. The Reinach Consulting Agreement expires on August 1, 2021, subject to the right of either party to earlier terminate the Reinach Consulting Agreement on ten (10) day's prior written notice to the other party. In the event the Reinach Consulting Agreement is terminated by us prior to its expiration date other than for cause, any unvested RSUs will accelerate and vest in full upon such termination.

**Cherry Consulting Agreement**

In June 2019, we entered into a consulting agreement with Joel Cherry, our former President, Research and Development who resigned from the Company effective June 7, 2019 (the "Cherry Consulting Agreement"). Pursuant to the Cherry Consulting Agreement, Dr. Cherry agreed to perform certain consulting services for the Company, and as compensation for such services, Dr. Cherry's outstanding equity awards will continue to remain outstanding and vest in accordance with, and subject to, the 2010 EIP and the relevant award agreements during the term of the Cherry Consulting Agreement. The Cherry Consulting Agreement expires on June 8, 2020, which term may be extended by mutual agreement of the parties, subject to the right of either party to earlier terminate the Cherry Consulting Agreement on thirty (30) day's prior written notice to the other party or upon a breach of the agreement by the other party.

**Officer Loans**

In March, April, May and June 2019, Kathleen Valiasek, the Company's former Chief Financial Officer and current Chief Business Officer, provided loans to the Company in an aggregate principal amount of $1.2 million. Such amounts were repaid by the Company no later than twelve days after such loans were made and interest was accrued on each loan, while outstanding, at a rate of 12% per annum, for which the total interest accrued was $2,296.

**Naxyris Loan and Security Agreement**

On August 14, 2019, the Company, certain of the Company's subsidiaries (the "Subsidiary Guarantors") and, as lender, Naxyris, an existing stockholder of the Company and an investment vehicle owned by Naxos Capital Partners SCA Sicar, which is affiliated with NAXOS S.A.R.L. (Switzerland), for which director Carole Piwnica serves as director, entered into a Loan and Security Agreement (the "Naxyris Loan Agreement") to make available to the Company a secured term loan facility in an aggregate principal amount of up to $10,435,000 (the "Naxyris Loan Facility"), which the Company borrowed in full on August 14, 2019. Loans under the Naxyris Loan Facility have a maturity date of July 1, 2022 and accrue interest at a rate per annum equal to the greater of (i) 12% or (ii) the rate of interest payable with respect to any indebtedness of the Company plus 25 basis points, which interest will be payable monthly in arrears, provided that all interest accruing from and after August 14, 2019 through December 1, 2019 shall be due and payable on December 15, 2019.

The obligations of the Company under the Naxyris Loan Facility are (i) guaranteed by the Subsidiary Guarantors and (ii) secured by a perfected security interest in substantially all of the assets of the Company and the Subsidiary Guarantors (the "Collateral"), junior in payment priority to the Company's obligations under the LSA (see above under "Transactions with Foris — Loan and Security Agreement"), subject to certain limitations and exceptions, as well as the terms of the Intercreditor Agreement (as defined above). Mandatory prepayments of the outstanding amounts under the Naxyris Loan Facility will be required upon the occurrence of certain events, including asset sales, a change in control, and the incurrence of additional indebtedness, subject to certain exceptions and reinvestment rights. Outstanding amounts under the Naxyris Loan Facility must also be prepaid to the extent that the borrowing base exceeds the outstanding principal amount of the loans under the Naxyris Loan Facility. In addition, the Company may at its option prepay the outstanding principal amount of the loans under the Naxyris Loan Facility in full before the maturity date. Any prepayment of the loans under the Naxyris Loan Facility prior to the maturity date, whether pursuant to a mandatory or optional prepayment, is subject to a prepayment charge equal to one year's interest at the then-current interest rate for the Naxyris Loan Facility. Upon the repayment of the loans under the Naxyris loan facility, whether on the maturity date or earlier pursuant to an optional or mandatory prepayment, the Company will pay Naxyris an end of term fee. In addition, (i) the Company will be required to pay a fee equal to 6% of any amount the Company fails to pay within three business days of its due date and (ii) any interest

that is not paid when due will be added to principal and will bear compound interest at the applicable rate. The affirmative and negative covenants in the Naxyris Loan Agreement relate to, among other items: (i) payment of taxes; (ii) financial reporting; (iii) maintenance of insurance; and (iv) limitations on indebtedness, liens, mergers, consolidations and acquisitions, transfers of assets, dividends and other distributions in respect of capital stock, investments, loans and advances, and corporate changes. The Naxyris Loan Agreement also contains financial covenants, including covenants related to minimum revenue, liquidity, and asset coverage.

On October 28, 2019, the Company, the Subsidiary Guarantors and Naxyris amended and restated the Naxyris Loan Agreement (the A&R Naxyris LSA), pursuant to which the maximum loan commitment of Naxyris under the Naxyris Loan Agreement was increased by $10.4 million. On October 29, 2019, the Company borrowed an additional $10.4 million (the October 2019 Naxyris Loan) from Naxyris under the A&R Naxyris LSA, which is subject to the terms and provisions of the A&R Naxyris LSA, including the lien on substantially all of the assets of the Company and the Subsidiary Guarantors. Also, under the terms of A&R Naxyris LSA, the Company owes a 5% end of term fee on the October 2019 Naxyris Loan amount and a $2.0 term loan fee, both of which are due at July 1, 2022 maturity or upon full repayment of the amounts borrowed under the A&R Naxyris LSA. Also, the Company paid Naxyris an upfront fee of $0.4 million at the funding date of the October 2019 Naxyris Loan. After giving effect to the October 2019 Naxyris Loan amount, there is $24.4 million aggregate principal amount of loans outstanding under the A&R Naxyris LSA. Also, in connection with the entry into the A&R Naxyris LSA, on October 28, 2019 the Company issued to Naxyris a warrant to purchase up to 2.0 million shares of common stock, at an exercise price of $3.87 per share, with an exercise term of two years from issuance (the October 2019 Naxyris Warrant).

**Compensation Arrangements**

Stephanie Kung, the daughter of director Frank Kung, is a non-executive employee of Amyris and received employment compensation in excess of $120,000 in 2018 and 2019 and we expect that she will receive employment compensation in excess of $120,000 in 2020.

**Indemnification Arrangements**

Please see “Executive Compensation — Limitation of Liability and Indemnification” above for information regarding our indemnification arrangements with our directors and executive officers.

**Executive Compensation and Employment Arrangements**

Please see “Executive Compensation” above for information regarding our compensation arrangements with our executive officers, including equity awards and employment agreements with our executive officers.

**Registration Rights Agreements**

Certain of our stockholders, including certain entities affiliated with our directors and/or holders of five percent or more of our outstanding common stock, including DSM, Foris, Vivo and Total, hold registration rights pursuant to (i) the Amended and Restated Letter Agreement, dated May 8, 2014, by and among us and certain of our stockholders, (ii) the letter agreement, dated July 29, 2015, by and among us and certain investors, (iii) the Registration Rights Agreement, dated October 20, 2015, by and among us and certain purchasers of our 9.50% Convertible Senior Notes due 2019, (iv) the warrant to purchase common stock issued by us to Nenter & Co., Inc. on November 16, 2016, (v) the Securities Purchase Agreement, dated May 8, 2017, by and among us and certain investors, (vi) the Securities Purchase Agreement, dated May 31, 2017, by and between us and the investor named therein, (vii) the Securities Purchase Agreement, dated August 2, 2017, by and between us and DSM International B.V., (viii) the Stockholder Agreement, dated August 3, 2017, by and between us and affiliates of Vivo Capital LLC, (ix) the Amended and Restated Stockholder Agreement, dated August 7, 2017, by and between us and DSM International B.V., (x) the DSM SPA, (xi) the Registration Rights Agreement, dated December 10, 2018, by and among us and the investors party thereto, (xii) the Security Purchase Agreement, dated April 24, 2019, by and between us and ETP BioHealth (I) Fund LP, (xiii) the common stock purchase warrants issued by us to each of Schottenfeld Opportunities Fund II, L.P., Phase Five Partners, LP and Koyote Trading, LLC on September 10, 2019, (xiv) the common stock purchase warrants issued by us to each of Schottenfeld Opportunities Fund II, L.P. and Phase Five Partners, LP on November 14, 2019, and (xv) the 2020 SPAs.

**Related-Party Transactions Policy**

Our Related-Party Transactions Policy adopted by our Board of Directors requires that any transaction with a related party that must be reported under applicable SEC rules, other than certain compensation related matters, must be reviewed and approved or ratified by the Audit Committee of our Board of Directors or another independent body of our Board of Directors. Our Related-Party Transactions Policy contains specific procedures to be followed, and factors to be considered, in connection with the review of such transactions, but does not contain specific standards for approval of such transactions.

## Householding of Proxy Materials

The SEC has adopted rules that permit companies and Intermediaries to satisfy the delivery requirements for proxy statements and annual reports, including Notices of Internet Availability of Proxy Materials, with respect to two or more stockholders sharing the same address by delivering a single Notice of Internet Availability of Proxy Materials (the "Notice") or other proxy materials addressed to those stockholders. This process, which is commonly referred to as "householding," potentially means extra convenience for stockholders and cost savings for companies.

A number of brokers with account holders who are Amyris stockholders may be "householding" our proxy materials. A single copy of the Notice or other proxy materials may be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that they will be "householding" communications to your address, "householding" will continue until you are notified otherwise or you submit contrary instructions. If, at any time, you no longer wish to participate in "householding" and would prefer to receive a separate Notice or other proxy materials, you may: (1) notify your broker; (2) direct your written request to Amyris Investor Relations at 5885 Hollis Street, Suite 100, Emeryville, California 94608 or to investor@amyris.com; or (3) contact Amyris Investor Relations at (510) 740-7481. Stockholders who currently receive multiple copies of the Notice or other proxy materials at their addresses and would like to request "householding" of their communications should contact their brokers or Amyris Investor Relations at the address or telephone number above. In addition, we will promptly deliver, upon written or oral request to the address or telephone number above, a separate copy of the Notice or other proxy materials to a stockholder at a shared address to which a single copy of such documents was delivered.

## Available Information

We will provide to any stockholder entitled to vote at our 2020 Annual Meeting of Stockholders, at no charge, a copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (the "Form 10-K"), including the financial statements and the financial statement schedules contained in the Form 10-K. We make our Annual Reports on Form 10-K, as well as our other SEC filings, available free of charge through the investor relations section of our website located at http://investors.amyris.com as soon as reasonably practicable after they are filed with or furnished to the SEC. Information contained on or accessible through our website or contained on other websites is not deemed to be part of this Proxy Statement. In addition, you may request a copy of the Form 10-K by sending an e-mail request to Amyris Investor Relations at investor@amyris.com, calling (510) 740-7481, or writing to Amyris Investor Relations at 5885 Hollis Street, Suite 100, Emeryville, California 94608.

## Incorporation of Information by Reference

The SEC allows us to "incorporate by reference" certain information we file with the SEC, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this Proxy Statement. We incorporate herein the following information contained in or attached to the Form 10-K being delivered to stockholders along with this Proxy Statement: (1) Item 7 entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," (2) Item 7A entitled "Quantitative and Qualitative Disclosures About Market Risk," (3) Item 8 entitled "Financial Statements and Supplementary Data" and (4) Item 9 entitled "Changes in and Disagreements with Accountants on Accounting and Financial Disclosure".

## Stockholder Proposals to be Presented at Next Annual Meeting

Stockholder proposals may be included in our proxy statement for an annual meeting so long as they are provided to us on a timely basis and satisfy the other conditions set forth in SEC regulations under Rule 14a-8 regarding the inclusion of stockholder proposals in company-sponsored proxy materials. For a stockholder proposal to be considered for inclusion in our proxy statement for the annual meeting to be held in 2021, we must receive the proposal at our principal executive offices, addressed to the Secretary, no later than December 18, 2020. In addition, a stockholder proposal that is not intended for inclusion in our proxy statement under Rule 14a-8 may be brought before the 2021 annual meeting so long as we receive information

and notice of the proposal in compliance with the requirements set forth in our bylaws, addressed to the Secretary at our principal executive offices, not later than March 15, 2021 nor earlier than February 13, 2021.

## Other Matters

The Board knows of no other matters that will be presented for consideration at the annual meeting. If any other matters are properly brought before the meeting, it is the intention of the persons named in the accompanying proxy to vote on such matters in accordance with their best judgment.

**BY ORDER OF THE BOARD OF DIRECTORS,**

Nicole Kelsey
*General Counsel and Secretary*

Emeryville, California
April 17, 2020

**AMYRIS, INC.**

**2020 EQUITY INCENTIVE PLAN**

**1. PURPOSE**. The purpose of this Plan is to provide incentives to attract, retain and motivate eligible persons whose present and potential contributions are important to the success of the Company, and any Parents, Subsidiaries and Affiliates that exist now or in the future, by offering them an opportunity to participate in the Company's future performance through the grant of Awards. Capitalized terms not defined elsewhere in the text are defined in Section 28.

**2. SHARES SUBJECT TO THE PLAN**.

**2.1.** Number of Shares Available. Subject to Section 2.4, Section 2.6 and Section 21 and any other applicable provisions hereof, the total number of Shares reserved and available for grant and issuance pursuant to this Plan as of the Effective Date of the Plan, is initially comprised of (a) Shares reserved for grant under the Company's 2010 Equity Incentive Plan (the "***Prior Plan***") on the Effective Date that are not subject to outstanding grants on the Effective Date, (b) Shares that are subject to stock options or other awards granted under the Prior Plan that cease to be subject to such stock options or other awards by forfeiture or otherwise after the Effective Date, (c) Shares issued under the Prior Plan before or after the Effective Date pursuant to the exercise of stock options that are, after the Effective Date, forfeited, (d) Shares issued under the Prior Plan that are repurchased by the Company at the original issue price and (e) Shares that are subject to stock options or other awards under the Prior Plan that are used to pay the exercise price of an option or withheld to satisfy the tax withholding obligations related to any award.

**2.2.** Lapsed, Returned Awards. Shares subject to Awards, and Shares issued under the Plan under any Award, will again be available for grant and issuance in connection with subsequent Awards under this Plan to the extent such Shares: (a) are subject to issuance upon exercise of an Option or SAR granted under this Plan but which cease to be subject to the Option or SAR for any reason other than exercise of the Option or SAR; (b) are subject to Awards granted under this Plan that are forfeited or are repurchased by the Company at the original issue price; (c) are subject to Awards granted under this Plan that otherwise terminate without such Shares being issued; or (d) are surrendered pursuant to an Exchange Program. To the extent an Award under the Plan is paid out in cash rather than Shares, such cash payment will not result in reducing the number of Shares available for issuance under the Plan. Shares used to pay the exercise price of an Award or withheld to satisfy the tax withholding obligations related to an Award will become available for future grant or sale under the Plan. For the avoidance of doubt, Shares that otherwise become available for grant and issuance because of the provisions of this Section 2.2 shall not include Shares subject to Awards that initially became available because of the substitution clause in Section 21.2 hereof.

**2.3.** Minimum Share Reserve. At all times the Company will reserve and keep available a sufficient number of Shares as will be required to satisfy the requirements of all outstanding Awards granted under this Plan.

**2.4.** Automatic Share Reserve Increase. The number of Shares available for grant and issuance under the Plan will be increased on January 1 for each of the calendar years during the term of the Plan by the lesser of (a) five percent (5%) of all classes of the Company's common stock outstanding on each December 31 immediately prior to the date of increase or (b) such number of Shares determined by the Board.

**2.5.** ISO Limitation. No more than Thirty Million (30,000,000) Shares shall be issued pursuant to the exercise of ISOs (as defined below) under the Plan.

**2.6.** Adjustment of Shares. If the number of outstanding Shares is changed by a stock dividend, extraordinary dividend or distribution (whether in cash, shares or other property, other than a regular cash dividend), recapitalization, stock split, reverse stock split, subdivision, combination, consolidation, reclassification, spin-off or similar change in the capital structure of the Company, without consideration, then (a) the number and class of Shares reserved for issuance and future grant under the Plan set forth in Section 2.1, including shares reserved under sub-clauses (a)-(e) of Section 2.1, (b) the Exercise Prices of and number and class of Shares subject to outstanding Options and SARs, (c) the number and class of Shares

subject to other outstanding Awards and (d) the maximum number and class of Shares that may be issued as ISOs set forth in Section 2.5 and (e) the maximum number of Shares that may be issued to an individual in any one calendar year set forth in Section 3, will be proportionately adjusted, subject to any required action by the Board or the stockholders of the Company and in compliance with applicable securities laws; provided that fractions of a Share will not be issued.

If, by reason of an adjustment pursuant to this Section 2.6, a Participant's Award Agreement or other agreement related to any Award or the Shares subject to such Award covers additional or different shares of stock or securities, then such additional or different shares, and the Award Agreement or such other agreement in respect thereof, will be subject to all of the terms, conditions and restrictions which were applicable to the Award or the Shares subject to such Award prior to such adjustment.

**3. ELIGIBILITY**. ISOs may be granted only to Employees. All other Awards may be granted to Employees, Consultants, Directors and Non-Employee Directors; provided such Consultants and Non-Employee Directors render bona fide services not in connection with the offer and sale of securities in a capital-raising transaction. No Participant will be eligible to receive more than four (4,000,000) million Shares in any calendar year under this Plan pursuant to the grant of Awards.

**4. ADMINISTRATION**.

**4.1.** Committee Composition; Authority. This Plan will be administered by the Committee or by the Board acting as the Committee. Subject to the general purposes, terms and conditions of this Plan, and to the direction of the Board, the Committee will have full power to implement and carry out this Plan, except, however, the Board will establish the terms for the grant of an Award to Non-Employee Directors. The Committee will have the authority to:

(a) construe and interpret this Plan, any Award Agreement and any other agreement or document executed pursuant to this Plan;

(b) prescribe, amend and rescind rules and regulations relating to this Plan or any Award;

(c) select persons to receive Awards;

(d) determine the form and terms and conditions, not inconsistent with the terms of the Plan, of any Award granted hereunder. Such terms and conditions include, but are not limited to, the Exercise Price, the time or times when Awards may vest and be exercised (which may be based on performance criteria) or settled, any vesting acceleration or waiver of forfeiture restrictions, the method to satisfy tax withholding obligations or any other tax liability legally due and any restriction or limitation regarding any Award or the Shares relating thereto, based in each case on such factors as the Committee will determine;

(e) determine the number of Shares or other consideration subject to Awards;

(f) determine the Fair Market Value in good faith and interpret the applicable provisions of this Plan and the definition of Fair Market Value in connection with circumstances that impact the Fair Market Value, if necessary;

(g) determine whether Awards will be granted singly, in combination with, in tandem with, in replacement of, or as alternatives to, other Awards under this Plan or any other incentive or compensation plan of the Company or any Parent, Subsidiary or Affiliate;

(h) grant waivers of Plan or Award conditions;

(i) determine the vesting, exercisability and payment of Awards;

(j) correct any defect, supply any omission or reconcile any inconsistency in this Plan, any Award or any Award Agreement;

(k) determine whether an Award has been vested and/or earned;

(l) determine the terms and conditions of any, and to institute any Exchange Program;

(m) reduce, waive or modify any criteria with respect to Performance Factors;

(n) adjust Performance Factors;

(o) adopt terms and conditions, rules and/or procedures (including the adoption of any subplan under this Plan) relating to the operation and administration of the Plan to accommodate requirements of local law and procedures outside of the United States or to qualify Awards for special tax treatment under laws of jurisdictions other than the United States;

(p) exercise discretion with respect to Performance Awards;

(q) make all other determinations necessary or advisable for the administration of this Plan; and

(r) delegate any of the foregoing to a subcommittee or to one or more executive officers pursuant to a specific delegation as permitted by applicable law.

**4.2.** Committee Interpretation and Discretion. Any determination made by the Committee with respect to any Award will be made in its sole discretion at the time of grant of the Award or, unless in contravention of any express term of the Plan or Award, at any later time, and such determination will be final and binding on the Company and all persons having an interest in any Award under the Plan. Any dispute regarding the interpretation of the Plan or any Award Agreement will be submitted by the Participant or Company to the Committee for review. The resolution of such a dispute by the Committee will be final and binding on the Company and the Participant. The Committee may delegate to one or more executive officers the authority to review and resolve disputes with respect to Awards held by Participants who are not Insiders, and such resolution will be final and binding on the Company and the Participant.

**4.3.** Section 16 of the Exchange Act. Awards granted to Participants who are subject to Section 16 of the Exchange Act must be approved by two or more "non-employee directors" (as defined in the regulations promulgated under Section 16 of the Exchange Act).

**4.4.** Documentation. The Award Agreement for a given Award, the Plan and any other documents may be delivered to, and accepted by, a Participant or any other person in any manner (including electronic distribution or posting) that meets applicable legal requirements.

**4.5.** Foreign Award Recipients. Notwithstanding any provision of the Plan to the contrary, in order to comply with the laws and practices in other countries in which the Company and its Subsidiaries or Affiliates operate or have Employees or other individuals eligible for Awards, the Committee, in its sole discretion, will have the power and authority to: (a) determine which Subsidiaries and Affiliates will be covered by the Plan; (b) determine which individuals outside the United States are eligible to participate in the Plan; (c) modify the terms and conditions of any Award granted to individuals outside the United States or foreign nationals to comply with applicable foreign laws, policies, customs and practices; (d) establish subplans and modify exercise procedures, vesting conditions, and other terms and procedures, to the extent the Committee determines such actions to be necessary or advisable (and such subplans and/or modifications will be attached to this Plan as appendices, if necessary); provided, however, that no such subplans and/or modifications will increase the share limitations contained in Section 2.1 hereof; and (e) take any action, before or after an Award is made, that the Committee determines to be necessary or advisable to obtain approval or comply with any local governmental regulatory exemptions or approvals. Notwithstanding the foregoing, the Committee may not take any actions hereunder, and no Awards will be granted, that would violate the Exchange Act or any other applicable United States securities law, the Code, or any other applicable United States governing statute or law.

**5. OPTIONS**. An Option is the right but not the obligation to purchase a Share, subject to certain conditions, if applicable. The Committee may grant Options to eligible Employees, Consultants and Directors or any Parent, Subsidiary or Affiliate and will determine whether such Options will be Incentive Stock Options within the meaning of the Code ("***ISOs***") or Nonqualified Stock Options ("***NSOs***"), the number of Shares subject to the Option, the Exercise Price of the Option, the period during which the Option may vest and be exercised, and all other terms and conditions of the Option, subject to the following terms of this section.

**5.1.** Option Grant. Each Option granted under this Plan will identify the Option as an ISO or an NSO. An Option may be, but need not be, awarded upon satisfaction of such Performance Factors during any

Performance Period as are set out in advance in the Participant's individual Award Agreement. If the Option is being earned upon the satisfaction of Performance Factors, then the Committee will: (a) determine the nature, length and starting date of any Performance Period for each Option; and (b) select from among the Performance Factors to be used to measure the performance, if any. Performance Periods may overlap and Participants may participate simultaneously with respect to Options that are subject to different performance goals and other criteria.

**5.2.** Date of Grant. The date of grant of an Option will be the date on which the Committee makes the determination to grant such Option, or a specified future date. The Award Agreement will be delivered to the Participant within a reasonable time after the granting of the Option.

**5.3.** Exercise Period. Options may be vested and exercisable within the times or upon the conditions as set forth in the Award Agreement governing such Option; provided, however, that no Option will be exercisable after the expiration of ten (10) years from the date the Option is granted; and provided further that no ISO granted to a person who, at the time the ISO is granted, directly or by attribution owns more than ten percent (10%) of the total combined voting power of all classes of stock of the Company or of any Parent or Subsidiary ("***Ten Percent Stockholder***") will be exercisable after the expiration of five (5) years from the date the ISO is granted. The Committee also may provide for Options to become exercisable at one time or from time to time, periodically or otherwise, in such number of Shares or percentage of Shares as the Committee determines.

**5.4.** Exercise Price. The Exercise Price of an Option will be determined by the Committee when the Option is granted; provided that: (a) the Exercise Price of an Option will be not less than one hundred percent (100%) of the Fair Market Value of the Shares on the date of grant and (b) the Exercise Price of any ISO granted to a Ten Percent Stockholder will not be less than one hundred ten percent (110%) of the Fair Market Value of the Shares on the date of grant. Payment for the Shares purchased may be made in accordance with Section 11 and the Award Agreement and in accordance with any procedures established by the Company.

**5.5.** Method of Exercise. Any Option granted hereunder will be vested and exercisable according to the terms of the Plan and at such times and under such conditions as determined by the Committee and set forth in the Award Agreement. An Option may not be exercised for a fraction of a Share. An Option will be deemed exercised when the Company receives: (a) notice of exercise (in such form as the Committee may specify from time to time) from the person entitled to exercise the Option (and/or via electronic execution through the authorized third-party administrator), and (b) full payment for the Shares with respect to which the Option is exercised (together with applicable withholding taxes). Full payment may consist of any consideration and method of payment authorized by the Committee and permitted by the Award Agreement and the Plan. Shares issued upon exercise of an Option will be issued in the name of the Participant. Until the Shares are issued (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a stockholder will exist with respect to the Shares, notwithstanding the exercise of the Option. The Company will issue (or cause to be issued) such Shares promptly after the Option is exercised. No adjustment will be made for a dividend or other right for which the record date is prior to the date the Shares are issued, except as provided in Section 2.6 of the Plan. Exercising an Option in any manner will decrease the number of Shares thereafter available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

**5.6.** Termination of Service. If the Participant's Service terminates for any reason except for Cause or the Participant's death or Disability, then the Participant may exercise such Participant's Options only to the extent that such Options would have been exercisable by the Participant on the date Participant's Service terminates no later than three (3) months after the date Participant's Service terminates (or such shorter or longer time period as may be determined by the Committee, with any exercise beyond three (3) months after the date Participant's employment terminates deemed to be the exercise of an NSO), but in any event no later than the expiration date of the Options.

(a) Death. If the Participant's Service terminates because of the Participant's death (or the Participant dies within three (3) months after Participant's Service terminates other than for Cause or because of the Participant's Disability), then the Participant's Options may be exercised only to the extent that such Options would have been exercisable by the Participant on the date Participant's Service

terminates and must be exercised by the Participant's legal representative, or authorized assignee, no later than twelve (12) months after the date Participant's Service terminates (or such shorter time period or longer time periodas may be determined by the Committee), but in any event no later than the expiration date of the Options.

(b) Disability. If the Participant's Service terminates because of the Participant's Disability, then the Participant's Options may be exercised only to the extent that such Options would have been exercisable by the Participant on the date Participant's Service terminates and must be exercised by the Participant (or the Participant's legal representative or authorized assignee) no later than twelve (12) months after the date Participant's Service terminates (or such shorter or longer time period as may be determined by the Committee, with any exercise beyond (a) three (3) months after the date Participant's employment terminates when the termination of Service is for a Disability that is not a "permanent and total disability" as defined in Section 22(e)(3) of the Code, or (b) twelve (12) months after the date Participant's employment terminates when the termination of Service is for a Disability that is a "permanent and total disability" as defined in Section 22(e)(3) of the Code, deemed to be exercise of an NSO), but in any event no later than the expiration date of the Options.

(c) Cause. If the Participant's Service terminates for Cause, then Participant's Options (whether or not vested) will expire on the date of termination of Participant's Service if the Committee has reasonably determined in good faith that such cessation of Services has resulted in connection with an act or failure to act constituting Cause (or such Participant's Services could have been terminated for Cause (without regard to the lapsing of any required notice or cure periods in connection therewith) at the time such Participant terminated Services), or at such later time and on such conditions as are determined by the Committee, but in any event no later than the expiration date of the Options. Unless otherwise provided in an employment agreement, Award Agreement, or other applicable agreement, Cause will have the meaning set forth in the Plan.

**5.7.** Limitations on Exercise. The Committee may specify a minimum number of Shares that may be purchased on any exercise of an Option, provided that such minimum number will not prevent any Participant from exercising the Option for the full number of Shares for which it is then exercisable.

**5.8.** Limitations on ISOs. With respect to Awards granted as ISOs, to the extent that the aggregate Fair Market Value of the Shares with respect to which such ISOs are exercisable for the first time by the Participant during any calendar year (under all plans of the Company and any Parent or Subsidiary) exceeds one hundred thousand dollars ($100,000), such Options will be treated as NSOs. For purposes of this Section 5.8, ISOs will be taken into account in the order in which they were granted. The Fair Market Value of the Shares will be determined as of the time the Option with respect to such Shares is granted. In the event that the Code or the regulations promulgated thereunder are amended after the Effective Date to provide for a different limit on the Fair Market Value of Shares permitted to be subject to ISOs, such different limit will be automatically incorporated herein and will apply to any Options granted after the effective date of such amendment.

**5.9.** Modification, Extension or Renewal. The Committee may modify, extend or renew outstanding Options and authorize the grant of new Options in substitution therefor, provided that any such action may not, without the written consent of a Participant, impair any of such Participant's rights under any Option previously granted. Any outstanding ISO that is modified, extended, renewed or otherwise altered will be treated in accordance with Section 424(h) of the Code. Subject to Section 18 of this Plan, by written notice to affected Participants, the Committee may reduce the Exercise Price of outstanding Options without the consent of such Participants; provided, however, that the Exercise Price may not be reduced below the Fair Market Value on the date the action is taken to reduce the Exercise Price.

**5.10.** No Disqualification. Notwithstanding any other provision in this Plan, no term of this Plan relating to ISOs will be interpreted, amended or altered, nor will any discretion or authority granted under this Plan be exercised, so as to disqualify this Plan under Section 422 of the Code or, without the consent of the Participant affected, to disqualify any ISO under Section 422 of the Code.

**6. RESTRICTED STOCK AWARDS**. A Restricted Stock Award is an offer by the Company to sell to an eligible Employee, Consultant, or Director or any Parent, Subsidiary or Affiliate Shares that are subject to

restrictions ("***Restricted Stock***"). The Committee will determine to whom an offer will be made, the number of Shares the Participant may purchase, the Purchase Price, the restrictions under which the Shares will be subject and all other terms and conditions of the Restricted Stock Award, subject to the Plan.

**6.1.** Restricted Stock Purchase Agreement. All purchases under a Restricted Stock Award will be evidenced by an Award Agreement. Except as may otherwise be provided in an Award Agreement, a Participant accepts a Restricted Stock Award by signing and delivering to the Company an Award Agreement with full payment of the Purchase Price, within thirty (30) days from the date the Award Agreement was delivered to the Participant. If the Participant does not accept such Award within thirty (30) days, then the offer of such Restricted Stock Award will terminate, unless the Committee determines otherwise.

**6.2.** Purchase Price. The Purchase Price for a Restricted Stock Award will be determined by the Committee and may be less than Fair Market Value on the date the Restricted Stock Award is granted. Payment of the Purchase Price must be made in accordance with Section 11 of the Plan, and the Award Agreement and in accordance with any procedures established by the Company.

**6.3.** Terms of Restricted Stock Awards. Restricted Stock Awards will be subject to such restrictions as the Committee may impose or are required by law. These restrictions may be based on completion of a specified number of years of service with the Company or upon completion of Performance Factors, if any, during any Performance Period as set out in advance in the Participant's Award Agreement. Prior to the grant of a Restricted Stock Award, the Committee shall: (a) determine the nature, length and starting date of any Performance Period for the Restricted Stock Award; (b) select from among the Performance Factors to be used to measure performance goals, if any; and (c) determine the number of Shares that may be awarded to the Participant. Performance Periods may overlap and a Participant may participate simultaneously with respect to Restricted Stock Awards that are subject to different Performance Periods and having different performance goals and other criteria.

**6.4.** Termination of Service. Except as may be set forth in the Participant's Award Agreement, vesting ceases on such date Participant's Service terminates (unless determined otherwise by the Committee).

**7. STOCK BONUS AWARDS**. A Stock Bonus Award is an award to an eligible Employee, Consultant, or Director or any Parent, Subsidiary or Affiliate of Shares for Services to be rendered or for past Services already rendered to the Company or any Parent, Subsidiary or Affiliate. All Stock Bonus Awards shall be made pursuant to an Award Agreement. No payment from the Participant will be required for Shares awarded pursuant to a Stock Bonus Award.

**7.1.** Terms of Stock Bonus Awards. The Committee will determine the number of Shares to be awarded to the Participant under a Stock Bonus Award and any restrictions thereon. These restrictions may be based upon completion of a specified number of years of service with the Company or upon satisfaction of performance goals based on Performance Factors during any Performance Period as set out in advance in the Participant's Stock Bonus Agreement. Prior to the grant of any Stock Bonus Award the Committee shall: (a) determine the nature, length and starting date of any Performance Period for the Stock Bonus Award; (b) select from among the Performance Factors to be used to measure performance goals; and (c) determine the number of Shares that may be awarded to the Participant. Performance Periods may overlap and a Participant may participate simultaneously with respect to Stock Bonus Awards that are subject to different Performance Periods and different performance goals and other criteria.

**7.2.** Form of Payment to Participant. Payment may be made in the form of cash, whole Shares, or a combination thereof, based on the Fair Market Value of the Shares earned under a Stock Bonus Award on the date of payment, as determined in the sole discretion of the Committee.

**7.3.** Termination of Service. Except as may be set forth in the Participant's Award Agreement, vesting ceases on such date Participant's Service terminates (unless determined otherwise by the Committee).

**8. STOCK APPRECIATION RIGHTS**. A Stock Appreciation Right ("***SAR***") is an award to an eligible Employee, Consultant, or Director or any Parent, Subsidiary or Affiliate that may be settled in cash, or Shares (which may consist of Restricted Stock), having a value equal to (a) the difference between the Fair Market Value on the date of exercise less the Exercise Price multiplied by (b) the number of Shares with respect to

which the SAR is being settled (subject to any maximum number of Shares that may be issuable as specified in an Award Agreement). All SARs shall be made pursuant to an Award Agreement.

**8.1.** Terms of SARs. The Committee will determine the terms of each SAR including, without limitation: (a) the number of Shares subject to the SAR; (b) the Exercise Price and the time or times during which the SAR may be settled; (c) the consideration to be distributed on settlement of the SAR; and (d) the effect of the Participant's termination of Service on each SAR. The Exercise Price of the SAR will be determined by the Committee when the SAR is granted, and may not be less than Fair Market Value. A SAR may be awarded upon satisfaction of Performance Factors, if any, during any Performance Period as are set out in advance in the Participant's individual Award Agreement. If the SAR is being earned upon the satisfaction of Performance Factors, then the Committee will: (x) determine the nature, length and starting date of any Performance Period for each SAR; and (y) select from among the Performance Factors to be used to measure the performance, if any. Performance Periods may overlap and Participants may participate simultaneously with respect to SARs that are subject to different Performance Factors and other criteria.

**8.2.** Exercise Period and Expiration Date. A SAR will be exercisable within the times or upon the occurrence of events determined by the Committee and set forth in the Award Agreement governing such SAR. The SAR Agreement shall set forth the expiration date; provided that no SAR will be exercisable after the expiration of ten (10) years from the date the SAR is granted. The Committee may also provide for SARs to become exercisable at one time or from time to time, periodically or otherwise (including, without limitation, upon the attainment during a Performance Period of performance goals based on Performance Factors), in such number of Shares or percentage of the Shares subject to the SAR as the Committee determines. Except as may be set forth in the Participant's Award Agreement, vesting ceases on the date Participant's Service terminates (unless determined otherwise by the Committee). Notwithstanding the foregoing, the rules of Section 5.6 also will apply to SARs.

**8.3.** Form of Settlement. Upon exercise of a SAR, a Participant will be entitled to receive payment from the Company in an amount determined by multiplying (a) the difference between the Fair Market Value of a Share on the date of exercise less the Exercise Price; times (b) the number of Shares with respect to which the SAR is exercised. At the discretion of the Committee, the payment from the Company for the SAR exercise may be in cash, in Shares of equivalent value, or in some combination thereof. The portion of a SAR being settled may be paid currently or on a deferred basis with such interest, if any, as the Committee determines, provided that the terms of the SAR and any deferral satisfy the requirements of Section 409A of the Code to the extent applicable.

**8.4.** Termination of Service. Except as may be set forth in the Participant's Award Agreement, vesting ceases on such date Participant's Service terminates (unless determined otherwise by the Committee).

**9. RESTRICTED STOCK UNITS**. A Restricted Stock Unit ("***RSU***") is an award to an eligible Employee, Consultant, or Director or any Parent, Subsidiary or Affiliate covering a number of Shares that may be settled in cash, or by issuance of those Shares (which may consist of Restricted Stock). All RSUs shall be made pursuant to an Award Agreement.

**9.1.** Terms of RSUs. The Committee will determine the terms of an RSU including, without limitation: (a) the number of Shares subject to the RSU; (b) the time or times during which the RSU may be settled; (c) the consideration to be distributed on settlement; and (d) the effect of the Participant's termination of Service on each RSU; provided that no RSU shall have a term longer than ten (10) years. An RSU may be awarded upon satisfaction of such performance goals based on Performance Factors during any Performance Period as are set out in advance in the Participant's Award Agreement. If the RSU is being earned upon satisfaction of Performance Factors, then the Committee will: (x) determine the nature, length and starting date of any Performance Period for the RSU; (y) select from among the Performance Factors to be used to measure the performance, if any; and (z) determine the number of Shares deemed subject to the RSU. Performance Periods may overlap and Participants may participate simultaneously with respect to RSUs that are subject to different Performance Periods and different performance goals and other criteria.

**9.2.** Form and Timing of Settlement. Payment of earned RSUs shall be made as soon as practicable after the date(s) determined by the Committee and set forth in the Award Agreement. The Committee, in its sole discretion, may settle earned RSUs in cash, Shares, or a combination of both. The Committee may also

permit a Participant to defer payment under an RSU to a date or dates after the RSU is earned provided that the terms of the RSU and any deferral satisfy the requirements of Section 409A of the Code to the extent applicable.

**9.3.** Termination of Service. Except as may be set forth in the Participant's Award Agreement, vesting ceases on such date Participant's Service terminates (unless determined otherwise by the Committee).

**10. PERFORMANCE AWARDS**. A Performance Award is an award to an eligible Employee, Consultant, or Director of the Company or any Parent, Subsidiary or Affiliate that is based upon the attainment of performance goals, as established by the Committee, and other terms and conditions specified by the Committee, and may be settled in cash, Shares (which may consist of, without limitation, Restricted Stock), other property, or any combination thereof. Grants of Performance Awards shall be made pursuant to an Award Agreement.

**10.1.** Performance Awards shall include Performance Shares, Performance Units, and cash-based Awards as set forth in Sections 10.1(a), 10.1(b), and 10.1(c) below.

(a) Performance Shares. The Committee may grant Awards of Performance Shares, designate the Participants to whom Performance Shares are to be awarded and determine the number of Performance Shares and the terms and conditions of each such Award. Performance Shares shall consist of a unit valued by reference to a designated number of Shares, the value of which may be paid to the Participant by delivery of Shares or, if set forth in the instrument evidencing the Award, of such property as the Committee shall determine, including, without limitation, cash, Shares, other property, or any combination thereof, upon the attainment of performance goals, as established by the Committee, and other terms and conditions specified by the Committee. The amount to be paid under an Award of Performance Shares may be adjusted on the basis of such further consideration as the Committee shall determine in its sole discretion.

(b) Performance Units. The Committee may grant Awards of Performance Units, designate the Participants to whom Performance Units are to be awarded and determine the number of Performance Units and the terms and conditions of each such Award. Performance Units shall consist of a unit valued by reference to a designated amount of property other than Shares, which value may be paid to the Participant by delivery of such property as the Committee shall determine, including, without limitation, cash, Shares, other property, or any combination thereof, upon the attainment of performance goals, as established by the Committee, and other terms and conditions specified by the Committee.

(c) Cash-Settled Performance Awards. The Committee may grant cash-settled Performance Awards to Participants under the terms of this Plan. Such awards will be based on the attainment of performance goals using the Performance Factors within this Plan that are established by the Committee for the relevant performance period.

**10.2.** Terms of Performance Awards. Performance Awards will be based on the attainment of performance goals using the Performance Factors within this Plan that are established by the Committee for the relevant Performance Period. The Committee will determine, and each Award Agreement shall set forth, the terms of each Performance Award including, without limitation: (a) the amount of any cash bonus, (b) the number of Shares deemed subject to an award of Performance Shares; (c) the Performance Factors and Performance Period that shall determine the time and extent to which each award of Performance Shares shall be settled; (d) the consideration to be distributed on settlement, and (e) the effect of the Participant's termination of Service on each Performance Award. In establishing Performance Factors and the Performance Period the Committee will: (x) determine the nature, length and starting date of any Performance Period; (y) select from among the Performance Factors to be used; and (z) determine the number of Shares deemed subject to the award of Performance Shares. Prior to settlement the Committee shall determine the extent to which Performance Awards have been earned. Performance Periods may overlap, and Participants may participate simultaneously with respect to Performance Awards that are subject to different Performance Periods and different performance goals and other criteria.

**10.3.** Termination of Service. Except as may be set forth in the Participant's Award Agreement, vesting ceases on the date Participant's Service terminates (unless determined otherwise by the Committee).

**11. PAYMENT FOR SHARE PURCHASES**. Payment from a Participant for Shares purchased pursuant to this Plan may be made in cash or by check or, where approved for the Participant by the Committee and where permitted by law (and to the extent not otherwise set forth in the applicable Award Agreement):

(a) by cancellation of indebtedness of the Company to the Participant;

(b) by surrender of shares of the Company held by the Participant that have a Fair Market Value on the date of surrender equal to the aggregate exercise price of the Shares as to which said Award will be exercised or settled;

(c) by waiver of compensation due or accrued to the Participant for services rendered or to be rendered to the Company or a Parent or Subsidiary;

(d) by consideration received by the Company pursuant to a broker-assisted or other form of cashless exercise program implemented by the Company in connection with the Plan;

(e) by any combination of the foregoing; or

(f) by any other method of payment as is permitted by applicable law.

**12. GRANTS TO NON-EMPLOYEE DIRECTORS**.

**12.1.** Grant and Eligibility. Non-Employee Directors are eligible to receive any type of Award offered under this Plan except ISOs. Awards pursuant to this Section 12 may be automatically made pursuant to policy adopted by the Board, or made from time to time as determined in the discretion of the Board. No Non-Employee Director may receive Awards under the Plan that, when combined with cash compensation received for service as a Non-Employee Director, exceeds $500,000 in value (as described below) in any calendar year. The value of Awards for purposes of complying with this maximum shall be determined as follows: (a) for Options and SARs, grant date fair value will be calculated using the Black-Scholes valuation methodology on the date of grant of such Option or SAR, and (b) for all other Awards other than Options and SARs, grant date fair value will be determined by either (i) calculating the product of the Fair Market Value per Share on the date of grant and the aggregate number of Shares subject to the Award, or (ii) calculating the product using an average of the Fair Market Value over a number of trading days and the aggregate number of Shares subject to the Award as determined by the Committee. Awards granted, or cash compensation paid, to an individual while he or she was serving in the capacity as an Employee or while he or she was a Consultant but not a Non-Employee Director will not count for purposes of the limitations set forth in this Section 12.1. Awards under the Plan may be granted to Non-Employee Directors may be automatically made pursuant to a policy adopted by the Board, or made from time to time as determined in the discretion of the Board.

**12.2.** Vesting, Exercisability and Settlement. Except as set forth in Section 21, Awards will vest, become exercisable and be settled as determined by the Board. With respect to Options and SARs, the exercise price granted to Non-Employee Directors will not be less than the Fair Market Value of the Shares at the time that such Option or SAR is granted.

**13. WITHHOLDING TAXES**.

**13.1.** Withholding Generally. Whenever Shares are to be issued in satisfaction of Awards granted under this Plan or a tax event occurs, the Company may require the Participant to remit to the Company, or to the Parent, Subsidiary or Affiliate, as applicable, employing the Participant, an amount sufficient to satisfy applicable U.S. federal, state, local and international tax or any other tax or social insurance liability (the "***Tax-Related Items***") required to be withheld from the Participant prior to the delivery of Shares pursuant to exercise or settlement of any Award. Whenever payments in satisfaction of Awards granted under this Plan are to be made in cash, such payment will be net of an amount sufficient to satisfy applicable withholding obligations for Tax-Related Items. Unless otherwise determined by the Committee, the Fair Market Value of the Shares will be determined as of the date that the taxes are required to be withheld and such Shares will be valued based on the value of the actual trade or, if there is none, the Fair Market Value of the Shares as of the previous trading day.

**13.2.** Stock Withholding. The Committee, or its delegate(s), as permitted by applicable law, in its sole discretion and pursuant to such procedures as it may specify from time to time and to limitations of local law, may require or permit a Participant to satisfy such Tax Related Items legally due from the Participant, in whole or in part by (without limitation) (a) paying cash, (b) having the Company withhold otherwise deliverable cash or Shares having a Fair Market Value equal to the Tax-Related Items to be withheld, (c) delivering to the Company already-owned shares having a Fair Market Value equal to the Tax-Related Items to be withheld or (d) withholding from the proceeds of the sale of otherwise deliverable Shares acquired pursuant to an Award either through a voluntary sale or through a mandatory sale arranged by the Company. The Company may withhold or account for these Tax-Related Items by considering applicable statutory withholding rates or other applicable withholding rates, including up to (but not in excess of) the maximum permissible statutory tax rate for the applicable tax jurisdiction, to the extent consistent with applicable laws.

**14. TRANSFERABILITY**. Unless determined otherwise by the Committee, an Award may not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or by the laws of descent or distribution. If the Committee makes an Award transferable, including, without limitation, by instrument to an inter vivos or testamentary trust in which the Awards are to be passed to beneficiaries upon the death of the trustor (settlor) or by gift or by domestic relations order to a Permitted Transferee, such Award will contain such additional terms and conditions as the Committee deems appropriate. All Awards will be exercisable: (a) during the Participant's lifetime only by the Participant, or the Participant's guardian or legal representative; (b) after the Participant's death, by the legal representative of the Participant's heirs or legatees; and (c) in the case of all awards except ISOs, by a Permitted Transferee.

**15. PRIVILEGES OF STOCK OWNERSHIP; RESTRICTIONS ON SHARES**.

**15.1.** Voting and Dividends. No Participant will have any of the rights of a stockholder with respect to any Shares until the Shares are issued to the Participant, except for any Dividend Equivalent Rights permitted by an applicable Award Agreement. Any Dividend Equivalent Rights will be subject to the same vesting or performance conditions as the underlying Award. In addition, the Committee may provide that any Dividend Equivalent Rights permitted by an applicable Award Agreement will be deemed to have been reinvested in additional Shares or otherwise reinvested. After Shares are issued to the Participant, the Participant will be a stockholder and have all the rights of a stockholder with respect to such Shares, including the right to vote and receive all dividends or other distributions made or paid with respect to such Shares; provided, that if such Shares are Restricted Stock, then any new, additional or different securities the Participant may become entitled to receive with respect to such Shares by virtue of a stock dividend, stock split or any other change in the corporate or capital structure of the Company will be subject to the same restrictions as the Restricted Stock; provided, further, that the Participant will have no right to such stock dividends or stock distributions with respect to Unvested Shares, and any such dividends or stock distributions will be accrued and paid only at such time, if any, as such Unvested Shares become vested Shares. The Committee, in its discretion, may provide in the Award Agreement evidencing any Award that the Participant will be entitled to Dividend Equivalent Rights with respect to the payment of cash dividends on Shares underlying an Award during the period beginning on the date the Award is granted and ending, with respect to each Share subject to the Award, on the earlier of the date on which the Award is exercised or settled or the date on which it is forfeited provided, that no Dividend Equivalent Right will be paid with respect to the Unvested Shares, and such dividends or stock distributions will be accrued and paid only at such time, if any, as such Unvested Shares become vested Shares. Such Dividend Equivalent Rights, if any, will be credited to the Participant in the form of additional whole Shares as of the date of payment of such cash dividends on Shares.

**15.2.** Restrictions on Shares. At the discretion of the Committee, the Company may reserve to itself and/or its assignee(s) a right to repurchase (a "***Right of Repurchase***") a portion of any or all Unvested Shares held by a Participant following such Participant's termination of Service at any time within ninety (90) days (or such longer or shorter time determined by the Committee) after the later of the date Participant's Service terminates and the date the Participant purchases Shares under this Plan, for cash and/or cancellation of purchase money indebtedness, at the Participant's Purchase Price or Exercise Price, as the case may be.

**16. CERTIFICATES**. All Shares or other securities whether or not certificated, delivered under this Plan will be subject to such stock transfer orders, legends and other restrictions as the Committee may deem necessary or advisable, including restrictions under any applicable U.S. federal, state or foreign securities law,

or any rules, regulations and other requirements of the SEC or any stock exchange or automated quotation system upon which the Shares may be listed or quoted and any non-U.S. exchange controls or securities law restrictions to which the Shares are subject.

**17. ESCROW; PLEDGE OF SHARES**. To enforce any restrictions on a Participant's Shares, the Committee may require the Participant to deposit all certificates representing Shares, together with stock powers or other instruments of transfer approved by the Committee, appropriately endorsed in blank, with the Company or an agent designated by the Company to hold in escrow until such restrictions have lapsed or terminated, and the Committee may cause a legend or legends referencing such restrictions to be placed on the certificates. Any Participant who is permitted to execute a promissory note as partial or full consideration for the purchase of Shares under this Plan will be required to pledge and deposit with the Company all or part of the Shares so purchased as collateral to secure the payment of the Participant's obligation to the Company under the promissory note; provided, however, that the Committee may require or accept other or additional forms of collateral to secure the payment of such obligation and, in any event, the Company will have full recourse against the Participant under the promissory note notwithstanding any pledge of the Participant's Shares or other collateral. In connection with any pledge of the Shares, the Participant will be required to execute and deliver a written pledge agreement in such form as the Committee will from time to time approve. The Shares purchased with the promissory note may be released from the pledge on a pro rata basis as the promissory note is paid.

**18. REPRICING; EXCHANGE AND BUYOUT OF AWARDS**. Without prior stockholder approval, the Committee may not pursuant to an Exchange Program or otherwise (a) reprice Options or SARs, and (b) pay cash or issue new Awards in exchange for the surrender and cancellation of any, or all, outstanding Awards.

**19. SECURITIES LAW AND OTHER REGULATORY COMPLIANCE**. An Award will not be effective unless such Award is in compliance with all applicable U.S. and foreign federal and state securities and exchange control laws, rules and regulations of any governmental body, and the requirements of any stock exchange or automated quotation system upon which the Shares may then be listed or quoted, as they are in effect on the date of grant of the Award and also on the date of exercise or other issuance. Notwithstanding any other provision in this Plan, the Company will have no obligation to issue or deliver certificates for Shares under this Plan prior to: (a) obtaining any approvals from governmental agencies that the Company determines are necessary or advisable; and/or (b) completion of any registration or other qualification of such Shares under any state or federal or foreign law or ruling of any governmental body that the Company determines to be necessary or advisable. The Company will be under no obligation to register the Shares with the SEC or to effect compliance with the registration, qualification or listing requirements of any foreign or state securities laws, exchange control laws, stock exchange or automated quotation system, and the Company will have no liability for any inability or failure to do so.

**20. NO OBLIGATION TO EMPLOY**. Nothing in this Plan or any Award granted under this Plan will confer or be deemed to confer on any Participant any right to continue in the employ of, or to continue any other relationship with, the Company or any Parent, Subsidiary or Affiliate or limit in any way the right of the Company or any Parent, Subsidiary or Affiliate to terminate Participant's employment or other relationship at any time.

**21. CORPORATE TRANSACTIONS**.

**21.1.** Assumption or Replacement of Awards by Successor. In the event of a Corporate Transaction any or all outstanding Awards may be (a) continued by the Company, if the Company is the successor entity; or (b) assumed or substituted by the successor corporation, or a parent or subsidiary of the successor corporation, for substantially equivalent Awards (including, but not limited to, a payment in cash or the right to acquire the same consideration paid to the stockholders of the Company pursuant to the Corporate Transaction), in each case after taking into account appropriate adjustments for the number and kind of shares and exercise prices. The successor corporation may also issue, as replacement of outstanding Shares of the Company held by the Participant, substantially similar shares or other property subject to repurchase restrictions no less favorable to the Participant. In the event such successor corporation refuses to assume, substitute or replace any Award in accordance with this Section 21, then notwithstanding any other provision in this Plan to the contrary, each such Award shall become fully vested and, as applicable, exercisable and any rights of repurchase or forfeiture restrictions thereon shall lapse, immediately prior to the consummation of

the Corporation Transaction. Performance Awards not assumed pursuant to the foregoing shall be deemed earned and vested at 100% of target level, unless otherwise indicated pursuant to the terms and conditions of the applicable Award Agreement.

If an Award vests in lieu of assumption or substitution in connection with a Corporate Transaction as provided above, the Committee will notify the holder of such Award in writing or electronically that such Award will be exercisable for a period of time determined by the Committee in its sole discretion, and such Award will terminate upon the expiration of such period without consideration. Any determinations by the Committee need not treat all outstanding Awards in an identical manner, and shall be final and binding on each applicable Participant.

**21.2.** Assumption of Awards by the Company. The Company, from time to time, also may substitute or assume outstanding awards granted by another company, whether in connection with an acquisition of such other company or otherwise, by either; (a) granting an Award under this Plan in substitution of such other company's award; or (b) assuming such award as if it had been granted under this Plan if the terms of such assumed award could be applied to an Award granted under this Plan. Such substitution or assumption will be permissible if the holder of the substituted or assumed award would have been eligible to be granted an Award under this Plan if the other company had applied the rules of this Plan to such grant. In the event the Company assumes an award granted by another company, the terms and conditions of such award will remain unchanged (except that the Purchase Price or the Exercise Price, as the case may be, and the number and nature of Shares issuable upon exercise or settlement of any such Award will be adjusted appropriately pursuant to Section 424(a) of the Code). In the event the Company elects to grant a new Option in substitution rather than assuming an existing option, such new Option may be granted with a similarly adjusted Exercise Price. Substitute Awards will not reduce the number of Shares authorized for grant under the Plan or authorized for grant to a Participant in a calendar year.

**21.3.** Non-Employee Directors' Awards. Notwithstanding any provision to the contrary herein, in the event of a Corporate Transaction, the vesting of all Awards granted to Non-Employee Directors will accelerate and such Awards will become exercisable (as applicable) in full prior to the consummation of such event at such times and on such conditions as the Committee determines.

**22. ADOPTION AND STOCKHOLDER APPROVAL**. This Plan will be submitted for the approval of the Company's stockholders, consistent with applicable laws, within twelve (12) months before or after the date this Plan is adopted by the Board.

**23. TERM OF PLAN/GOVERNING LAW**. Unless earlier terminated as provided herein, this Plan will become effective on the Effective Date and will terminate ten (10) years thereafter is adopted by the Board. This Plan and all Awards granted hereunder will be governed by and construed in accordance with the laws of the State of Delaware (excluding its conflict of laws rules).

**24. AMENDMENT OR TERMINATION OF PLAN**. The Board may at any time terminate or amend this Plan in any respect, including, without limitation, amendment of any form of Award Agreement or instrument to be executed pursuant to this Plan; provided, however, that the Board will not, without the approval of the stockholders of the Company, amend this Plan in any manner that requires such stockholder approval; provided further, that a Participant's Award will be governed by the version of this Plan then in effect at the time such Award was granted. No termination or amendment of the Plan or any outstanding Award may adversely affect any then outstanding Award without the consent of the Participant, unless such termination or amendment is necessary to comply with applicable law, regulation or rule.

**25. NONEXCLUSIVITY OF THE PLAN**. Neither the adoption of this Plan by the Board, the submission of this Plan to the stockholders of the Company for approval, nor any provision of this Plan will be construed as creating any limitations on the power of the Board to adopt such additional compensation arrangements as it may deem desirable, including, without limitation, the granting of stock awards and bonuses otherwise than under this Plan, and such arrangements may be either generally applicable or applicable only in specific cases.

**26. INSIDER TRADING POLICY**. Each Participant who receives an Award will comply with any policy adopted by the Company from time to time covering transactions in the Company's securities by Employees, officers and/or Directors of the Company, as well as with any applicable insider trading or market abuse laws to which the Participant may be subject.

**27. <u>ALL AWARDS SUBJECT TO COMPANY CLAWBACK OR RECOUPMENT POLICY</u>.** All Awards, subject to applicable law, shall be subject to clawback or recoupment pursuant to any compensation clawback or recoupment policy adopted by the Board or required by law during the term of Participant's employment or other service with the Company that is applicable to Employees, Directors or other service providers of the Company, and in addition to any other remedies available under such policy and applicable law, may require the cancellation of outstanding Awards and the recoupment of any gains realized with respect to Awards.

**28. <u>DEFINITIONS</u>.** As used in this Plan, and except as elsewhere defined herein, the following terms will have the following meanings:

**28.1.** "***Affiliate***" means any person or entity that directly or indirectly through one or more intermediaries controls, or is controlled by, or is under common control with, the Company, including any general partner, managing member, officer or director of the Company, in each case as of the date on which, or at any time during the period for which, the determination of affiliation is being made. For purposes of this definition, the term "control" (including the correlative meanings of the terms "controlled by" and "under common control with"), as used with respect to any person or entity, means the possession, directly or indirectly, of the power to direct or cause the direction of the management policies of such person or entity, whether through the ownership of voting securities or by contract or otherwise.

**28.2.** "***Award***" means any award under the Plan, including any Option, Restricted Stock, Stock Bonus, Stock Appreciation Right, Restricted Stock Unit or Performance Award.

**28.3.** "***Award Agreement***" means, with respect to each Award, the written or electronic agreement between the Company and the Participant setting forth the terms and conditions of the Award, and country-specific appendix thereto for grants to non-U.S. Participants, which will be in substantially a form (which need not be the same for each Participant) that the Committee (or in the case of Award agreements that are not used for Insiders, the Committee's delegate(s)) has from time to time approved, and will comply with and be subject to the terms and conditions of this Plan.

**28.4.** "***Board***" means the Board of Directors of the Company.

**28.5.** "***Cause***" means a determination by the Company (and in the case of Participant who is subject to Section 16 of the Exchange Act, the Committee) that the Participant has committed an act or acts constituting any of the following: (a) dishonesty, fraud, misconduct or negligence in connection with Participant's duties to the Company, (b) unauthorized disclosure or use of the Company's confidential or proprietary information or trade secrets, (c) misappropriation of a business opportunity of the Company, (d) materially aiding Company competitor, (e) a conviction or plea of nolo contendere to a felony or crime involving moral turpitude, (f) failure or refusal to attend to the duties or obligations of the Participant's position (g) violation or breach of, or failure to comply with, the Company's code of ethics or conduct, any of the Company's rules, policies or procedures applicable to the Participant or any agreement in effect between the Company and the Participant or (h) other conduct by such Participant that could be expected to be harmful to the business, interests or reputation of the Company. The determination as to whether Cause for a Participant's termination exists will be made in good faith by the Company and will be final and binding on the Participant. This definition does not in any way limit the Company's or any Parent's or Subsidiary's ability to terminate a Participant's employment or services at any time as provided in Section 20 above. Notwithstanding the foregoing, the foregoing definition of "Cause" may, in part or in whole, be modified or replaced in each individual employment agreement, Award Agreement, or other applicable agreement with any Participant provided that such document specifically supersedes this definition.

**28.6.** "***Code***" means the United States Internal Revenue Code of 1986, as amended, and the regulations promulgated thereunder.

**28.7.** "***Committee***" means the Compensation Committee of the Board or those persons to whom administration of the Plan, or part of the Plan, has been delegated as permitted by law.

**28.8.** "***Company***" means Amyris, Inc., a Delaware corporation, or any successor corporation.

**28.9.** "***Consultant***" means any natural person, including an advisor or independent contractor, engaged by the Company or a Parent, Subsidiary or Affiliate to render services to such entity.

**28.10.** "***Corporate Transaction***" means the occurrence of any of the following events: (a) any "Person" (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becomes the "beneficial owner" (as defined in Rule 13d-3 of the Exchange Act), directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the total voting power represented by the Company's then-outstanding voting securities; provided, however, that for purposes of this subclause (a) the acquisition of additional securities by any one Person who is considered to own more than fifty percent (50%) of the total voting power of the securities of the Company will not be considered a Corporate Transaction; (b) the consummation of the sale or disposition by the Company of all or substantially all of the Company's assets; (c) the consummation of a merger or consolidation of the Company with any other corporation, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or its parent) at least fifty percent (50%) of the total voting power represented by the voting securities of the Company or such surviving entity or its parent outstanding immediately after such merger or consolidation; (d) any other transaction which qualifies as a "corporate transaction" under Section 424(a) of the Code wherein the stockholders of the Company give up all of their equity interest in the Company (except for the acquisition, sale or transfer of all or substantially all of the outstanding shares of the Company) or (e) a change in the effective control of the Company that occurs on the date that a majority of members of the Board is replaced during any twelve (12) month period by members of the Board whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purpose of this subclause (e), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Corporate Transaction. For purposes of this definition, Persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company. Notwithstanding the foregoing, to the extent that any amount constituting deferred compensation (as defined in Section 409A of the Code) would become payable under this Plan by reason of a Corporate Transaction, such amount will become payable only if the event constituting a Corporate Transaction would also qualify as a change in ownership or effective control of the Company or a change in the ownership of a substantial portion of the assets of the Company, each as defined within the meaning of Code Section 409A, as it has been and may be amended from time to time, and any proposed or final Treasury Regulations and IRS guidance that has been promulgated or may be promulgated thereunder from time to time.

**28.11.** "***Director***" means a member of the Board.

**28.12.** "***Disability***" means in the case of incentive stock options, total and permanent disability as defined in Section 22(e)(3) of the Code and in the case of other Awards, that the Participant is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than 12 months.

**28.13.** "***Dividend Equivalent Right***" means the right of a Participant, granted at the discretion of the Committee or as otherwise provided by the Plan, to receive a credit for the account of such Participant in an amount equal to the cash, stock or other property dividends in amounts equivalent to cash, stock or other property dividends for each Share represented by an Award held by such Participant.

**28.14.** "***Effective Date***" means June 22, 2020 provided the Plan is approved by the stockholders of the Company before such date.

**28.15.** "***Employee***" means any person, including officers and Directors, providing services as an employee to the Company or any Parent, Subsidiary or Affiliate. Neither service as a Director nor payment of a director's fee by the Company will be sufficient to constitute "employment" by the Company.

**28.16.** "***Exchange Act***" means the United States Securities Exchange Act of 1934, as amended.

**28.17.** "***Exchange Program***" means a program pursuant to which (a) outstanding Awards are surrendered, cancelled or exchanged for cash, the same type of Award or a different Award (or combination thereof) or (b) the exercise price of an outstanding Award is increased or reduced, each as described in <u>Section 18</u>.

**28.18.** "***Exercise Price***" means, with respect to an Option, the price at which a holder may purchase the Shares issuable upon exercise of an Option and with respect to a SAR, the price at which the SAR is granted to the holder thereof.

**28.19.** "***Fair Market Value***" means, as of any date, the value of a share of the Company's common stock determined as follows:

(a) if such common stock is publicly traded and is then listed on a national securities exchange, its closing price on the date of determination on the principal national securities exchange on which the common stock is listed or admitted to trading as reported in *The Wall Street* Journal or such other source as the Committee deems reliable;

(b) if such common stock is publicly traded but is neither listed nor admitted to trading on a national securities exchange, the average of the closing bid and asked prices on the date of determination as reported in *The Wall Street Journal* or such other source as the Committee deems reliable; or

(c) by the Board or the Committee in good faith.

**28.20.** "***Insider***" means an officer or Director of the Company or any other person whose transactions in the Company's common stock are subject to Section 16 of the Exchange Act.

**28.21.** "***IRS***" means the United States Internal Revenue Service.

**28.22.** "***Non-Employee Director***" means a Director who is not an Employee of the Company or any Parent or Subsidiary.

**28.23.** "***Option***" means an Award as defined in Section 5 and granted under the Plan.

**28.24.** "***Parent***" means any corporation (other than the Company) in an unbroken chain of corporations ending with the Company if each of such corporations other than the Company owns stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

**28.25.** "***Participant***" means a person who holds an Award under this Plan.

**28.26.** ***"Performance Award"*** means an Award as defined in Section 10 and granted under the Plan.

**28.27.** ***"Performance Factors"*** means any of the factors selected by the Committee and specified in an Award Agreement, from among the following objective or subjective measures, either individually, alternatively or in any combination applied to the Participant, the Company, any business unit or Subsidiary, either individually, alternatively, or in any combination, on a GAAP or non-GAAP basis, and measured, to the extent applicable on an absolute basis or relative to a pre-established target, to determine whether the performance goals established by the Committee with respect to applicable Awards have been satisfied:

(a) Profit Before Tax;

(b) Sales;

(c) Expenses;

(d) Billings;

(e) Revenue;

(f) Net revenue;

(g) Earnings (which may include earnings before interest and taxes, earnings before taxes, net earnings, stock-based compensation expenses, depreciation and amortization);

(h) Operating income;

(i) Operating margin;

(j) Operating profit;

(k) Controllable operating profit, or net operating profit;

(l) Net Profit;

(m) Gross margin;

(n) Operating expenses or operating expenses as a percentage of revenue;

(o) Net income;

(p) Earnings per share;

(q) Total stockholder return;

(r) Market share;

(s) Return on assets or net assets;

(t) The Company's stock price;

(u) Growth in stockholder value relative to a pre-determined index;

(v) Return on equity;

(w) Return on invested capital;

(x) Cash Flow (including free cash flow or operating cash flows);

(y) Balance of cash, cash equivalents and marketable securities;

(z) Cash conversion cycle;

(aa) Economic value added;

(bb) Individual confidential business objectives;

(cc) Contract awards or backlog;

(dd) Overhead or other expense reduction;

(ee) Credit rating;

(ff) Completion of an identified special project;

(gg) Completion of a joint venture or other corporate transaction;

(hh) Strategic plan development and implementation;

(ii) Succession plan development and implementation;

(jj) Improvement in workforce diversity;

(kk) Employee satisfaction;

(ll) Employee retention;

(mm) Customer indicators and/or satisfaction;

(nn) New product invention or innovation;

(oo) Research and development expenses;

(pp) Attainment of research and development milestones;

(qq) Improvements in productivity;

(rr) Bookings;

(ss) Working-capital targets and changes in working capital;

(tt) Attainment of operating goals and employee metrics; and

(uu) Any other metric as determined by the Committee.

The Committee may provide for one or more equitable adjustments to the Performance Factors to preserve the Committee's original intent regarding the Performance Factors at the time of the initial award grant, such as but not limited to, adjustments in recognition of unusual or non-recurring items such as acquisition related activities or changes in applicable accounting rules. It is within the sole discretion of the Committee to make or not make any such equitable adjustments.

**28.28.** "***Performance Period***" means one or more periods of time, which may be of varying and overlapping durations, as the Committee may select, over which the attainment of one or more Performance Factors will be measured for the purpose of determining a Participant's right to, and the payment of, a Performance Award.

**28.29.** "***Performance Share***" means an Award as defined in Section 10 and granted under the Plan.

**28.30.** "***Permitted Transferee***" means any child, stepchild, grandchild, parent, stepparent, grandparent, spouse, former spouse, sibling, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law (including adoptive relationships) of the Employee, any person sharing the Employee's household (other than a tenant or employee), a trust in which these persons (or the Employee) have more than 50% of the beneficial interest, a foundation in which these persons (or the Employee) control the management of assets, and any other entity in which these persons (or the Employee) own more than 50% of the voting interests.

**28.31.** *"**Performance Unit**"* means an Award as defined in Section 10 and granted under the Plan.

**28.32.** "***Plan***" means this Arcutis Biotherapeutics, Inc. 2020 Equity Incentive Plan.

**28.33.** "***Purchase Price***" means the price to be paid for Shares acquired under the Plan, other than Shares acquired upon exercise of an Option or SAR.

**28.34.** "***Restricted Stock Award***" means an Award as defined in Section 6 and granted under the Plan (or issued pursuant to the early exercise of an Option).

**28.35.** "***Restricted Stock Unit***" means an Award as defined in Section 9 and granted under the Plan.

**28.36.** "***SEC***" means the United States Securities and Exchange Commission.

**28.37.** "***Securities Act***" means the United States Securities Act of 1933, as amended.

**28.38.** "***Service***" means service as an Employee, Consultant (upon approval by the Committee), Director or Non-Employee Director, to the Company or a Parent, Subsidiary or Affiliate, subject to such further limitations as may be set forth in the Plan or the applicable Award Agreement. An Employee will not be deemed to have ceased to provide Service in the case of (a) sick leave, (b) military leave, or (c) any other leave of absence approved by the Company; provided, that such leave is for a period of not more than 90 days unless reemployment upon the expiration of such leave is guaranteed by contract or statute. Notwithstanding anything to the contrary, an Employee will not be deemed to have ceased to provide Service if a formal policy adopted from time to time by the Company and issued and promulgated to employees in writing provides otherwise. In the case of any Employee on an approved leave of absence or a reduction in hours worked (for illustrative purposes only, a change in schedule from that of full-time to part-time), the Committee may make such provisions respecting suspension or modification of vesting of the Award while on leave from the employ of the Company or a Parent, Subsidiary or Affiliate or during such change in working hours as it may deem appropriate, except that in no event may an Award be exercised after the expiration of the term set forth in the applicable Award Agreement. In the event of military or other protected leave, if required by applicable laws, vesting will continue for the longest period that vesting continues under any other statutory or Company approved leave of absence and, upon a Participant's returning from military leave, he or she will be given

vesting credit with respect to Awards to the same extent as would have applied had the Participant continued to provide Service to the Company throughout the leave on the same terms as he or she was providing Service immediately prior to such leave. An Employee will have terminated employment as of the date he or she ceases to provide Service (regardless of whether the termination is in breach of local employment laws or is later found to be invalid) and employment will not be extended by any notice period or garden leave mandated by local law. A change in status from an Employee to a Consultant or a Non-Employee Director (or vice versa) will terminate a Participant's Service, unless determined by the Committee, in its discretion or to the extent set forth in the applicable Award Agreement. The Committee will have sole discretion to determine whether a Participant has ceased to provide Service and the effective date on which the Participant ceased to provide Service.

**28.39.** "***Shares***" means shares of the common stock of the Company.

**28.40.** "***Stock Appreciation Right***" means an Award as defined in Section 8 and granted under the Plan.

**28.41.** "***Stock Bonus***" means an Award granted pursuant to Section 7 of the Plan.

**28.42.** "***Subsidiary***" means any corporation (other than the Company) in an unbroken chain of corporations beginning with the Company if each of the corporations other than the last corporation in the unbroken chain owns stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

**28.43.** "***Treasury Regulations***" means regulations promulgated by the United States Treasury Department.

**28.44.** "***Unvested Shares***" means Shares that have not yet vested or are subject to a right of repurchase in favor of the Company (or any successor thereto).

**CERTIFICATE OF AMENDMENT OF THE RESTATED CERTIFICATE OF INCORPORATION OF AMYRIS, INC.**

Amyris, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "***Corporation***"),

DOES HEREBY CERTIFY THE FOLLOWING:

FIRST: That the name of the Corporation is Amyris, Inc.

SECOND: That the date on which the Certificate of Incorporation of the Corporation was originally filed with the Secretary of State of Delaware is April 15, 2010 under the name Amyris Biotechnologies, Inc.

THIRD: That, at a meeting of the Board of Directors of the Corporation (the "***Board***"), the Board duly adopted resolutions setting forth the following proposed amendment of the Restated Certificate of Incorporation of the Corporation, as amended, declaring said amendment to be advisable and directing the Corporation to submit said amendment to the next annual meeting of the stockholders of said Corporation for consideration thereof, and that, thereafter, pursuant to such resolutions, the Corporation submitted the amendment to the stockholders of the Corporation at such annual meeting of the stockholders of the Corporation duly called and held upon notice in accordance with Section 222 of the Delaware General Corporation Law at which meeting the necessary number of shares as required by statute were voted in favor of said amendment:

Section 1 of Article IV of the Corporation's Restated Certificate of Incorporation is hereby amended to read in its entirety as follows:

> "1. Total Authorized. The total number of shares of all classes of stock that the corporation has authority to issue is Three Hundred Fifty-Five Million (355,000,000) shares, consisting of two classes: Three Hundred Fifty Million (350,000,000) shares of Common Stock, $0.0001 par value per share, and Five Million (5,000,000) shares of Preferred Stock, $0.0001 par value per share."

FOURTH: That said amendment was duly adopted in accordance with the provisions of Section 242 of the Delaware General Corporation Law.

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment of the Restated Certificate of Incorporation to be signed by its General Counsel and Secretary this day of May, 2020 and the foregoing facts stated herein are true and correct.

**AMYRIS, INC.**

By: ______________________________

Name: Nicole Kelsey
Title: General Counsel and Secretary

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# UNITED STATES
# SECURITIES AND EXCHANGE COMMISSION
# Washington, D.C. 20549

## FORM 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the fiscal year ended December 31, 2019**

**OR**

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the transition period from ____ to ____**

**Commission File Number: 001-34885**

## AMYRIS, INC.

(Exact name of registrant as specified in its charter)

| **Delaware** | **55-0856151** |
|---|---|
| (State or other jurisdiction of incorporation or organization) | (I.R.S. Employer Identification No.) |

**5885 Hollis Street, Suite 100, Emeryville, California 94608**
(Address of principal executive offices and Zip Code)

**(510) 450-0761**
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

| Title of each class | Trading symbol(s) | Name of each exchange on which registered |
|---|---|---|
| **Common Stock, $0.0001 par value per share** | **AMRS** | **Nasdaq Global Select Market** |

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☐ No ☒

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☐ No ☒

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definitions of "large accelerated filer", "accelerated filer", "smaller reporting company", and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐ Accelerated filer ☒ Non-accelerated filer ☐ Smaller reporting company ☒ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant as of June 28, 2019, the last business day of the registrant's most recently completed second fiscal quarter, was $226.5 million based upon the closing price of the registrant's common stock reported for such date on the Nasdaq Global Select Market.

Number of shares of the registrant's common stock outstanding as of March 6, 2020: 163,843,407

**DOCUMENTS INCORPORATED BY REFERENCE**
None.

**AMYRIS, INC.**

**FORM 10-K**
**FOR THE YEAR ENDED DECEMBER 31, 2019**
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**Forward-Looking Statements**

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements contained in this Annual Report on Form 10-K other than statements of historical fact, including any projections of financing needs, revenue, expenses, earnings or losses from operations, or other financial items; any statements of the plans, strategies and objectives of management for future operations; any statements concerning product research, development and commercialization plans and timelines; any statements regarding expected production capacities, volumes and costs; any statements regarding anticipated benefits of our products and expectations for commercial relationships; any other statements of expectation or belief; and any statements of assumptions underlying any of the foregoing, are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "predict," "intend," "expect," and similar expressions are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in Part I, Item 1A, "Risk Factors" in this Annual Report on Form 10-K. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this Annual Report on Form 10-K may not occur, and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements contained herein.

We undertake no obligation to revise or publicly release the results of any revision to these forward-looking statements, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements.

Unless expressly indicated or the context requires otherwise, the terms "Amyris," the "Company," "we," "us," and "our" in this Annual Report on Form 10-K refer to Amyris, Inc., a Delaware corporation, and, where appropriate, its consolidated entities.

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# PART I

## ITEM 1. BUSINESS

### Overview

We are a leading industrial biotechnology company that applies its technology platform to engineer, manufacture and sell high performance, natural, sustainably-sourced products into the Health & Wellness, Clean Beauty, and Flavor & Fragrance markets. Our proven technology platform enables us to rapidly engineer microbes and use them as catalysts to metabolize renewable, plant-sourced sugars into large volume, high-value ingredients. Our biotechnology platform and industrial fermentation process replaces existing complex and expensive manufacturing processes. We have successfully used our technology to achieve nine molecules in production, leading to 17 commercial ingredients used by thousands of leading global brands.

We believe that industrial biotechnology represents a third industrial revolution, bringing together biology and engineering to generate new, more sustainable materials to meet the growing global demand for bio-based replacements for petroleum-based and traditional animal- or plant-derived ingredients. We continue to build demand for our current portfolio of products through an extensive sales network provided by our collaboration partners that represent the leading companies in the world for our target market sectors. We also have a small group of direct sales and distributors who support our Clean Beauty market. Via our partnership model, our partners invest in the development of each molecule to bring it from the lab to commercial scale and use their extensive sales forces to sell our ingredients and formulations to their customers as part of their core business. We capture long-term revenue through a combination of direct product sales, production and sale of the molecule to our partners, and royalty revenues from our partners' product sales to their customers.

We were founded in 2003 in the San Francisco Bay area by a group of scientists from the University of California, Berkeley. Our first major milestone came in 2005 when, through a grant from the Bill & Melinda Gates Foundation, we developed technology capable of creating microbial strains that produce artemisinic acid, which is a precursor of artemisinin, an effective anti-malarial drug. In 2008, we granted royalty-free licenses to allow Sanofi S.A. to produce artemisinic acid using our technology. Building on our success with artemisinic acid, in 2007 we began applying our technology platform to develop, manufacture and sell sustainable alternatives to a broad range of markets.

We focused our initial development efforts primarily on the production of Biofene®, our brand of renewable farnesene, a long-chain, branched hydrocarbon molecule that we manufacture through fermentation using engineered microbes. Our farnesene derivatives are sold or included in thousands of products as nutrition, health, skincare, fragrances, solvents, and fragrance ingredients. The commercialization of farnesene pushed us to create a more cost efficient, faster and accurate development process in the lab and drive manufacturing costs down. This investment has enabled our technology platform to rapidly develop microbial strains and commercialize target molecules. In 2014, we began manufacturing additional molecules for the Flavor & Fragrance industry. In 2015, we began investing to expand our capabilities to other small molecule chemical classes beyond terpenes, which comprised our initial research efforts (including through a Technology Investment Agreement with the Defense Advanced Research Projects Agency (DARPA)). In 2016 we expanded into the production of proteins.

Since the Company's inception, we have invested $700 million in infrastructure and technology to create microbes that produce molecules from sugar or other feedstocks at commercial scale. This platform has been used to design, build, optimize and upscale strains for nine molecules in production, leading to 17 commercial ingredients used by thousands of leading global brands. Our time to market for molecules has decreased from seven years to potentially less than a year, mainly due to our ability to leverage the technology platform we have built.

Our technology platform has been in active use since 2007 and has been integrated with our commercial production since 2011, creating an organism development process that we believe makes us an industry leader in the successful scale-up and commercialization of biotech-produced ingredients. The key performance characteristics of our platform that we believe differentiate us include our proprietary computational tools, strain construction tools, screening and analytics tools, and advanced lab automation and data integration. Full integration of the platform with our large-scale manufacturing capability enables us to engineer precisely with the end specification and commercial production requirements guiding our developments. Our state-of-the-art infrastructure includes industry-leading strain engineering and lab automation located in Emeryville, California, pilot-scale production facilities in Emeryville, California and Campinas, Brazil, a demonstration-scale facility in Campinas, Brazil and a commercial-scale production facility in Leland, North Carolina, which is owned and operated by our Aprinnova joint venture to convert our Biofene into squalane and other final products.

We are able to use a wide variety of feedstocks for production but have focused on accessing non-GMO Brazilian sugarcane for our large-scale production because of its renewability, low cost and relative price stability.

Several years ago, we made the strategic decision to transition our business model from developing and commercializing molecules in low margin commodity markets to higher margin specialty markets. We began the transition by commercializing and supplying farnesene-derived squalane as a cosmetic ingredient sold to formulators and distributors. We then entered into collaboration and supply agreements for the development and commercialization of molecules within the Flavor & Fragrance and Clean Beauty markets where we utilize our strain generation technology to develop molecules that meet the customer's rigorous specifications.

During this transition, we solidified the business model of partnering with our customers to create sustainable, high-performing, low-cost molecules that replace an ingredient in their supply chain, commercially scale and manufacture those molecules, and share in the profits earned by our customers once our customers sell their products into these specialty markets. These three steps constitute our grants and collaborations revenues, renewable product revenues, and royalty revenues.

In 2017, we decided to monetize the use of one of our lower margin molecules, farnesene, in certain fields of use while retaining any associated royalties. We began discussions with our partners and ultimately made the decision to license farnesene to Koninklijke DSM N.V. (DSM) for use in these fields. We also sold to DSM our subsidiary Amyris Brasil Ltda. (Amyris Brasil), which owned and operated the purpose-built, large-scale manufacturing facility in Brotas, Brazil that manufactures farnesene, a key, bio-based intermediate ingredient in certain of our products, in 2017.

The Brotas facility was built to batch manufacture one commodity product at a time (originally for high-volume production of biofuels, a business we have exited), which is an inefficient manufacturing process that is not suited for the high margin specialty markets in which we operate today. The inefficiencies we experienced at the Brotas facility included idling the facility for two weeks at a time to clean and prepare the plant for the production of the next molecule to be manufactured. These inefficiencies caused a significant increase in our cost of goods sold. We are in the process of constructing a new purpose-built, large-scale production facility in Brazil (see the Manufacturing section below), which we anticipate will allow for the manufacture of five products concurrently and over 10 different products annually. As part of the December 2017 sale of the Brotas facility, we contracted with DSM for the use of the Brotas facility to manufacture products for us to fulfill our product supply commitments to our customers until our new production facility becomes operational. In November 2018 and April 2019, we amended the supply agreement with DSM and entered into various other agreements with DSM. See Note 9, "Revenue Recognition" and Note 10, "Related Party Transactions" in Part II, Item 8 of this Annual Report on Form 10-K for a full listing and details of agreements with DSM. In September 2019, we obtained the necessary permits and broke ground on our Specialty Ingredients Plant (SIP). We expect facility construction to be completed in the second quarter of 2021. This facility will allow us to manufacture five products at once and to produce both our specialty ingredients portfolio and our alternative sweetener product.

As discussed above, on December 28, 2017, we completed the sale of Amyris Brasil, which operated our Brotas production facility, to DSM and concurrently entered into a series of commercial agreements and a credit agreement with DSM. At closing, we received $33.0 million in contractual cash consideration for the capital stock of Amyris Brasil, which was subject to certain post-closing working capital adjustments and reimbursements from DSM contingent on DSM's utilization of certain Brazilian tax benefits it acquired with its purchase of Amyris Brasil. We used $12.6 million of the cash proceeds received to repay certain indebtedness of Amyris Brasil. The total fair value of the contractual consideration received in connection with the sales agreement for Amyris Brasil was $56.9 million and resulted in a pretax gain of $5.7 million from continuing operations, recognized in fiscal 2017.

Concurrent with the sale of Amyris Brasil, we entered into a series of commercial agreements with DSM including (i) a license agreement to DSM of our farnesene product for DSM to use in the Vitamin E and Lubricants specialty markets; (ii) a royalty agreement, pursuant to which DSM agreed to pay us specified royalties representing a portion of the profit on the sale of Vitamin E produced from farnesene sold under the supply agreement with Nenter & Co., Inc. ("Nenter"), which was assigned to DSM; (iii) a performance agreement to perform research and development to optimize farnesene for production and sale of farnesene products; and (iv) a transition services agreement in which we provided finance, legal, logistics, and human resource services to support the Brotas facility under DSM ownership for a six-month period with a DSM option to extend for six additional months. At closing, DSM paid us a $27.5 million nonrefundable license fee and a $15.0 million nonrefundable minimum royalty revenue payment. DSM also agreed to pay us two additional future nonrefundable minimum annual royalty payments totaling $18.1 million related to 2019 and 2020 royalties. In June 2018, we received the 2019 non-refundable minimum royalty payment of $9.3 million (net of a $0.7 million early payment discount) and in March 2019, we received the 2020 payment of $7.4 million (net of a $0.7 million early payment discount).

In the second quarter of 2018, we successfully demonstrated our industrial process at full-scale to produce a high-purity, zero calorie sweetener derived from sugarcane, and in December 2018, we received notification from the U.S. Food and Drug Administration (the FDA) that we received its "Generally Recognized As Safe" designation concurrence, and began producing commercial quantities of Steviol Glycoside Rebaudioside M (or Reb M) at DSM's Brotas facility during the fourth quarter of 2018. Also, in the third and fourth quarters of 2019 we completed another successful campaign of Reb M utilizing the Brotas facility and a contract manufacturer for the purification steps and produced more than three times the volume of Reb M than in the December 2018/January 2019 campaign. We believe the Reb M molecule we are producing from sugarcane is one of the leading natural sweeteners. When derived from the Stevia plant, Reb M is found in very limited quantities. The Reb M we produce from sugarcane is more sustainable and lower cost than other natural sweeteners, and has a specific technical profile that we believe is advantaged in taste and total process economics for blends and formulations.

In June and December 2018, we and our contract manufacturer, Antibióticos de León (ADL), executed amendments to our January 2018 production agreement, thereby providing us additional tank capacity at ADL's production facility in León, Spain. These amendments provide additional, cost-effective manufacturing capability to meet higher than expected product demand from our partners. The amended agreement includes a commitment to running a certain number of batches at ADL's production facility from the period September 1, 2018 through December 31, 2019 for up to six of our products. In June 2019, we signed an additional amendment to this agreement extending our commitment through December 2020.

In the second quarter of 2018, we executed an agreement for a significant project consortium in Europe with the Universidade Católica Portuguesa (UCP) Porto Campus and AICEP Portugal Global (AICEP). UCP is a university system, including the leading biotech school in Portugal, and operates 15 research centers. AICEP is an independent public entity of the Government of Portugal, focused in encouraging foreign companies to invest in Portugal. In conjunction with this agreement, we opened a subsidiary in Porto, Portugal. The primary purpose of this subsidiary is to conduct a research and development project together with Escola Superior de Biotecnologia o Universidade Católica Portuguese. This subsidiary will be the second R&D center of Amyris and will be responsible for certain areas of research, namely valorization of fermentation residues and wastes and the advancement of the Company's Artificial Intelligence (AI) and Informatics platform. The overall multi-year project is valued up to approximately $50 million including investment funding and incentives allotted across the parties involved. We have sole responsibility for commercialization and majority ownership of all intellectual property (IP) generated. We believe this is the largest biotechnology grant ever awarded in Portugal and one of the largest ever approved by the AICEP for commercial applications.

In the third quarter of 2018, we entered into a supply and distribution agreement for our new, sugarcane-derived, zero calorie sweetener with ASR Group, the world's largest cane sugar refiner. Also in the third quarter of 2018, we entered into a license and collaboration agreement with a subsidiary of Yifan Pharmaceutical Co., Ltd. (Yifan), which is one of the leading Chinese pharmaceutical companies. Such license and collaboration agreement was expanded in November 2018.

On May 2, 2019, we consummated a research, collaboration and license agreement (the Cannabinoid Agreement) with LAVVAN, Inc., a newly formed investment-backed company (Lavvan), for up to $300 million for the development, manufacture and commercialization of cannabinoids. Under the agreement, the Company will perform research and development activities and Lavvan will be responsible for the commercialization of the cannabinoids developed under the agreement. The Cannabinoid Agreement is being principally funded on a milestone basis, with the Company also entitled to receive certain supplementary research and development funding from Lavvan. The Company could receive aggregate funding of up to $300 million over the term of the Cannabinoid Agreement if all of the milestones are achieved. Additionally, the agreement provides for royalties to the Company on Lavvan's gross profit margin once products are commercialized; these payments will be due for the next 20 years. Consummation of the transactions contemplated by the Cannabinoid Agreement included the formation of a special purpose entity to hold certain intellectual property created during the collaboration (the Cannabinoid Collaboration IP), the licensing of certain Company intellectual property to Lavvan, the licensing of the Cannabinoid Collaboration IP to the Company and Lavvan, and the granting by the Company to Lavvan of a lien on our background intellectual property being licensed to Lavvan under the Cannabinoid Agreement, which would be subordinated to the lien on such intellectual property under the Foris LSA debt facility; see Note 4, "Debt" in Part II, Item 8 of this Annual Report on Form 10-K for more information.

On May 10, 2019, the Company and Raizen Energia S.A. (Raizen) entered into an agreement relating to the formation and operation of a joint venture relating to the production, sale and commercialization of alternative sweetener products. In connection with the formation of the joint venture, among other things, (i) the joint venture will construct a manufacturing facility on land owned by Raizen and leased to the joint venture (the Sweetener Plant), (ii) the Company will grant to the joint venture an exclusive, royalty-free, worldwide, license to certain technology owned by the Company relevant to the joint venture's business, and (iii) the Company and Raizen will enter into a shareholders agreement setting forth the rights and obligations of the parties with respect to, and the management of, the joint venture. The formation of the joint venture is subject

to certain conditions, including certain regulatory approvals and the achievement of certain technological and economic milestones relating to the Company's existing production of its alternative sweetener product. If such conditions are not satisfied by May 2020, the joint venture will automatically terminate. In addition, notwithstanding the satisfaction of the closing conditions, Raizen may elect not to consummate the formation and operation of the joint venture, in which event, the Company will retain the right to construct and operate the Sweetener Plant.

**Technology**

We have developed innovative microbial engineering and screening technologies that allow us to transform the way microbes metabolize sugars. Specifically, we engineer microbes, such as yeast, and use them as catalysts to convert sugar, through fermentation, into high-value molecules. In 2015, we were awarded a technology investment agreement with DARPA to expand the capabilities of our technology platform. The investment has resulted in us developing an integrated platform with artificial intelligence that will speed up the development and commercialization of small molecules across 15 different chemical classes. We have also developed our technology to be able to produce large molecules, such as proteins.

We devote substantial resources to our research and development efforts. As of December 31, 2019, our research and development organization included 192 employees, 55 of whom held Ph.D.s. We also have an additional 30 Ph.D.s throughout the organization who contribute to the success of our technology platform. We have invested $700 million to date in our research and development capabilities that has resulted in an almost 6x improvement in speed to market and in the scale-up of nine successful molecules. These achievements are due to the leading strain engineering and upscaling and commercialization capabilities we have developed from our investment.

***Strain Engineering***

Companies and researchers around the world are continuously learning how the complex biological processes in organisms work. Because there is so much that is still unknown, the best method for development of commercially viable strains is to test as many hypotheses as accurately and quickly as possible to accelerate the learning curve.

We have developed a high-throughput strain engineering system that is currently capable of producing and screening more than 100,000 yeast strains per month, which enables us to achieve an approximately 90% lower cost per strain than we achieved in 2009. We generated more than 360,000 unique strains in 2019, surpassing 6.3 million unique strains created since our inception, with each strain testing for improved production of the target molecules. In addition, through our lab-scale and pilot-plant fermentation operations, and our proprietary analytical tools, we are now able to predict, with high reliability, the performance of candidate strains at industrial scale.

***Upscaling and Commercialization***

The riskiest part of commercializing biotechnology is often the scale up and manufacturing due to the perceived unpredictability of biotechnology at different scales. We have built scale-up and manufacturing capabilities as our advantage by heavily investing in prediction models and analytics to quickly ascertain how a strain's behavior at one scale will translate in another scale. We have successfully scaled-up and manufactured nine distinct molecules at commercial volumes to date, leading to 17 commercial ingredients used by thousands of leading global brands. The results of our advantage are accelerated speed to market, lower overall development costs, and a significantly lower risk profile for any project we undertake.

A strain must be improved to increase the level of efficiency of production, and tested for performance in pilot-scale facilities before it is implemented at commercial-scale manufacturing facilities. Our unique infrastructure to support this scale-up process includes lab-scale fermenters (0.5 to 2 liter), operating pilot plants in our facilities in Emeryville, California, which operates a 300-liter fermenter, and Campinas, Brazil, which operates 300- and 2,000-liter fermenters, and five years' experience owning and operating the 1,200,000-liter production facility in Brotas, Brazil that we sold in late 2017. Each of these stages mimic the conditions found in larger-scale fermentation so that our findings may translate predictably from lab-scale to pilot and ultimately to commercial-scale. Our infrastructure is so accurate that we can typically go straight from lab-scale to commercial-scale for our fermentations, and generally the only reason we ever invest in the pilot-scale step is to produce enough product to accurately test our downstream processing since our fermentation process is already robust.

The complexities that can arise at industrial-scale manufacturing are significant and it takes an experienced team to not only address issues as they arise, but to also have the foresight to prevent issues from arising. With five years of experience operating the production facility in Brotas, Brazil that we designed (prior to selling the facility in late 2017), we have been able to develop a world-class manufacturing team. This team has successfully brought online a production facility and scaled up and manufactured nine molecules at commercial-scale that are currently used in thousands of consumer goods products around the

world. Our effort also expands into continued strain and process improvements to ensure our manufacturing is robust and the most cost advantaged.

**Product Markets and Partnerships**

There are three market areas that are our primary focus and key to our growth: Health & Wellness, Clean Beauty and Flavor & Fragrance. Each of these markets embodies our core competencies of sustainably providing clean ingredients in markets where we can be the most impactful, not only from a growth and revenue standpoint, but also for healthier living.

We believe that our leadership in biotechnology is demonstrated by collaboration partners, who come to us to access our platform and industrial fermentation expertise. Together we seek to reduce environmental impact, enhance performance, reduce supply and price volatility, and improve profit margins. Our partners include Flavor & Fragrance companies such as Firmenich S.A. (Firmenich) and Givaudan International, SA (Givaudan), and nutrition companies such as DSM and Yifan. A portion of our work has also been funded by the U.S. government, including the Department of Energy (DOE) and DARPA, to develop technologies and processes capable of improving the ability to utilize biotechnology for the production of a broader range of molecules.

***Health & Wellness***

Our Health & Wellness focus includes alternative sweeteners, nutraceuticals, such as vitamins, and food ingredients. As consumers continue to demand higher nutritional performance, healthier ingredients and convenience from their food, the demand will continue to grow for specific ingredients that are often difficult and expensive to procure. Animal farming is also being impacted by the growing demand for protein and the need to change farming practices, such as reducing antibiotic use. Our technology can be employed to provide affordable access to these desired ingredients for both human and animal health. To date, product revenue in this area has been from a derivative made from our Biofene® product by our partner. In late 2018, we began to produce at commercial-scale an alternative, healthier sweetener. We introduced our product to the public during December 2018, at an investor event in NYC. In 2019, we ran two production campaigns that resulted in feedback that our Reb M product is distinguished by one of the best-tasting profiles in the industry to date. The market and commercial uptake has been significant. We have sold out the production for both campaigns. Also, by the end of 2019 we also introduced our B2C sweetener brand: Purecane. We currently offer this brand through our own website: www.purecane.com and we also plan to expand the distribution in Amazon in March. Finally, we currently offer Purecane in two product forms: a 100 sachet for table-top, and a culinary bag that has a cup for cup equivalency with sugar.

During 2015, we announced the signings of our first ingredient supply agreement and collaboration agreement for the global nutraceuticals market. Under the supply agreement, we sourced Biofene to our partner, which was then further processed into a nutraceutical product. In 2016, we made the first large-scale shipments of Biofene to our partner, who successfully produced and sold a nutraceutical product to its customers. In 2017 and 2018, we expanded our collaborations in nutraceuticals to four vitamins and a human nutrition ingredient.

***Flavor & Fragrance Markets***

Our technology enables us to cost-effectively produce natural oils and aroma chemicals that are commonly used in the Flavor & Fragrance market. Many of the natural ingredients used in the Flavor & Fragrance market are expensive because there is limited supply and the synthetic alternatives require complex chemical conversions. We offer Flavor & Fragrance companies a natural route to procure these high-value ingredients without sacrificing cost or quality. To date, we have successfully brought four Flavor & Fragrance ingredients to market with our collaboration partners. We also have several other ingredients under development.

In late 2013, we commenced commercial production of our first Flavor & Fragrance ingredient for a range of applications, from perfumes to laundry detergent, which is marketed by a collaboration partner which is a global Flavor & Fragrance leader. In 2014, we completed our first production campaign of this ingredient and shipped it to this collaboration partner. In late 2015, we commenced production and initial sales of our second Flavor & Fragrance ingredient to the same collaboration partner. During 2019, we added two new Flavor & Fragrance molecules to our list of successfully scaled products and we shipped seven compounds destined for the Flavor & Fragrance market (including compounds converted by our partners to Flavor & Fragrance ingredients) to our partners.

We continue to work to develop and commercialize a variety of Flavor & Fragrance ingredients that are either direct fermentation products or derivatives of fermentation products.

***Clean Beauty***

Our Clean Beauty focus includes clean skincare and cosmetic ingredients we develop and commercialize with our partners and our branded Biossance product line. In September 2019, we launched a new clean beauty baby brand, Pipette. We have several cosmetic ingredients currently under development. Our Biossance and Pipette products are discussed further in the *Amyris-branded Product Markets* section below.

***Amyris-branded Product Markets***

Through basic chemical finishing steps, we are able to convert our farnesene into squalane, which is used today as a premium emollient in clean skincare products. We believe that our squalane offers performance attributes equal or superior to those of squalane derived from conventional sources. The ingredient traditionally has been manufactured from olive oil or extracted from deep-sea shark liver oil, which requires that the shark be killed in order to harvest its liver oil. The relatively high price and unstable supply of squalane in the past meant that its use was generally limited to luxury products or small quantities in mass-market product formulations. With our ability to produce a reliable supply of low-cost squalane that eliminates the need to harvest shark liver oil, we offer this ingredient at a price that we believe will drive increasing adoption by formulators. In addition to squalane, we offer a second, lower-cost cosmetic ingredient, hemisqualane, for the cosmetics market. In December 2016, we and Nikko Chemicals Co., Ltd. (Nikko) formed a joint venture, in which we hold a 50% interest, for our business-to-business sales of Neossance squalane and hemisqualane. See below under "Joint Venture" for more information regarding our Aprinnova joint venture. The joint venture currently has supply agreements with several regional distributors, including those with locations in Japan, South Korea, Europe, Brazil and North America, and, in some cases, directly with cosmetics formulators, which we transferred to the joint venture during the formation process.

Our consumer clean skincare products, sold under our Biossance brand, feature our Biofene-derived squalane. Under our Biossance brand, we market and sell our products directly to retailers and consumers. Biossance was initially sold solely through our ecommerce branded website and in 2016, we expanded the product line to include an expansive line of clean high-performance skincare products and opened up sales through Home Shopping Network (HSN). In October 2016, we announced our Biossance product line would begin to be carried at Sephora in 2017. In February 2017, we launched a full squalane-based consumer cosmetic line at participating Sephora stores and Sephora online. All of the products are based on our commitment to No Compromise®. Since the launch of Biossance, sales have grown, and with Sephora's partnership, we continued to expand to more stores through 2019.

We launched a clean beauty brand, Pipette, in September 2019 with an initial offering of seven products developed for babies and moms to support and nurture the skin. Currently, the brand now offers nine unique products.

Pipette is available for purchase at Pipettebaby.com, buybuyBABY.com, Amazon.com, Walmart.com, and Dermstore.com, in-store exclusively at buybuy BABY® stores nationwide, and at our own direct website. Pipette recently became available for purchase at Target.com, as well. The brand is seeking further expansion through online and brick-and-mortar retailers.

**Manufacturing**

Until December 2017, we owned and operated a purpose-built, large-scale production facility located in Brotas, Brazil. In December 2017, we sold the facility to a unit of DSM and entered into a supply agreement with DSM for us to purchase output from the facility. See Note 12, "Divestiture" and Note 10, "Related Party Transactions" in Part II, Item 8 of this Annual Report on Form 10-K for additional information regarding our December 2017 transaction with DSM.

In September 2019, we obtained the necessary permits and broke ground on our Specialty Ingredients Plant (SIP). We expect facility construction to be completed in the second quarter of 2021. This facility will allow us to manufacture five products at once and to produce both our specialty ingredients portfolio and our alternative sweetener product. During construction, we are manufacturing our products at six contract manufacturing sites in Brazil, the U.S., Italy and Spain. In addition, in May 2019 we entered into an agreement with Raizen Energia S.A. (Raizen) for the formation and operation of a joint venture relating to the production, sale and commercialization of alternative sweetener products whereby the parties would construct a manufacturing facility exclusively for sweetener molecules on land owned by Raizen and leased to the joint venture; see Note 1, "Basis of Presentation and Summary of Significant Accounting Policies" in Part II, Item 8 of this Annual Report on Form 10-K for more details.

For many of our products, we perform additional distillation or chemical finishing steps to convert initial target molecules into other finished products, such as renewable squalane. We have agreements with several facilities in the U.S. and Brazil to perform these downstream steps for such products. We may enter into additional agreements with other facilities for finishing

services and to access flexible production capacity and an array of other services as we develop additional products. In December 2016, we purchased a manufacturing facility in Leland, North Carolina, which had been previously operated by Glycotech Inc. (Glycotech) to convert our Biofene into squalane and other final products. We subsequently contributed that facility to our Aprinnova joint venture. See below under "Joint Venture" for more information regarding our Aprinnova joint venture.

**Joint Venture**

***Aprinnova, LLC***

In December 2016, we entered into joint venture agreements with Nikko related to the formation of a joint venture to focus on the worldwide commercialization of our Neossance cosmetic ingredients business. We formed the joint venture under the name Neossance, LLC, and later changed the name to Aprinnova, LLC (the Aprinnova JV), which is jointly owned by us and Nikko. Pursuant to the joint venture agreements, we contributed certain assets to the Aprinnova JV, including certain intellectual property and other commercial assets relating to our Neossance cosmetic ingredients business, as well as the production facility in Leland, North Carolina and related assets purchased by us from Glycotech in December 2016. We also agreed to provide the Aprinnova JV with licenses to certain intellectual property necessary to make and sell products associated with the Neossance business. At the closing of the formation of the joint venture, Nikko purchased a 50% interest in the Aprinnova JV in exchange for an initial payment to Amyris of $10.0 million and payment to Amyris of any profits distributed in cash to Nikko from the Aprinnova JV during the three year period following December 12, 2016, up to a maximum of $10.0 million. In addition, as part of the formation of the Aprinnova JV, we and Nikko agreed to make certain working capital loans to the Aprinnova JV and executed a supply agreement to supply farnesene to the Aprinnova JV, to purchase all of our requirements for the Aprinnova JV products from the Aprinnova JV, to transfer all of our customers for the Aprinnova JV products to the Aprinnova JV, to guarantee a maximum production cost for certain Aprinnova JV products, and to bear any cost of production above such guaranteed costs.

**Product Distribution and Sales**

We distribute and sell our products directly to distributors or collaboration partners, or through joint ventures, depending on the market. For most of our products, we sell directly to our collaboration partners, except for our consumer care products, which we sell to distributors and formulators (other than our Biossance brand, which we sell directly to retailers and consumers). Generally, our collaboration agreements include commercial terms, and sales are contingent upon achievement of technical and commercial milestones.

For the year ended December 31, 2019, revenue from 10%-or-more customers and from all other customers was as follows:

| (In thousands) | Renewable Products | Licenses and Royalties | Grants and Collaborations | Total Revenue | % of Total Revenue |
|---|---|---|---|---|---|
| DSM | $ 10 | $ 49,051 | $ 4,120 | $ 53,181 | 34.9 % |
| Lavvan | — | — | 18,342 | 18,342 | 12.0 % |
| All other customers | 59,862 | 4,992 | 16,180 | 81,034 | 53.1 % |
| Total revenue | $ 59,872 | $ 54,043 | $ 38,642 | $ 152,557 | 100.0 % |

**Intellectual Property**

Our success depends in large part upon our ability to obtain and maintain proprietary protection for our products and technologies, and to operate without infringing on the proprietary rights of others. We seek to avoid the latter by monitoring patents and publications in our product areas and technologies to be aware of developments that may affect our business, and to the extent we identify such developments, evaluate and take appropriate courses of action. With respect to the former, our policy is to protect our proprietary position by, among other methods, filing for patent applications on inventions that are important to the development and conduct of our business with the U.S. Patent and Trademark Office (the USPTO), and its foreign counterparts.

As of December 31, 2019, we had 633 issued U.S. and foreign patents and 238 pending U.S. and foreign patent applications that are owned or co-owned by or licensed to us. We also use other forms of protection (such as trademark, copyright, and trade secret) to protect our intellectual property, particularly where we do not believe patent protection is appropriate or obtainable. We aim to take advantage of all of the intellectual property rights that are available to us and believe that this comprehensive approach provides us with a strong proprietary position.

Patents extend for varying periods according to the date of patent filing or grant and the legal term of patents in various countries where patent protection is obtained. The actual protection afforded by patents, which can vary from country to country, depends on the type of patent, the scope of its coverage and the availability of legal remedies in the country. See "*Risk Factors - Risks Related to Our Business - Our proprietary rights may not adequately protect our technologies and product candidates*."

We also protect our proprietary information by requiring our employees, consultants, contractors and other advisers to execute nondisclosure and assignment of invention agreements upon commencement of their respective employment or engagement. Agreements with our employees also prevent them from bringing the proprietary rights of third parties to us. In addition, we also require confidentiality or material transfer agreements from third parties that receive our confidential data or materials.

***Trademarks***

Amyris, the Amyris logo, Biofene, Biossance, Pipette, Purecane and No Compromise are trademarks or registered trademarks of Amyris, Inc or its subsidiaries. This report also contains trademarks and trade names of other businesses that are the property of their respective holders.

**Competition**

We expect that our renewable products will compete with products produced from traditional sources as well as from alternative production methods (including the intellectual property underlying such methods) that established enterprises and new companies are seeking to develop and commercialize.

***Health & Wellness***

Many active ingredients in the nutraceutical market are made via chemical synthesis by suppliers that have a deep chemistry knowhow and production facilities, including ingredient suppliers. We may compete directly with these companies with respect to specific ingredients or attempt to provide customers with more cost effective or higher performing alternatives. For food ingredients, we compete with companies that produce products from plant- and animal-derived sources as well as with companies that are also developing biotechnology production solutions to produce specific molecules.

***Flavor & Fragrance***

The main competition in the Flavor & Fragrance and cosmetic actives markets is from products derived from plant and animal sources as well as chemical synthesis. The products derived from plant and animal sources are typically produced at a higher cost, lower purity and create a greater impact on the environment compared to our products. Products derived from chemical synthesis are often produced at a low cost but may have ramifications on sustainability and on non-natural sourcing. There are also companies that are working to develop products using similar technology to us.

***Clean Beauty***

We develop and sell active cosmetic ingredients and consumer products in the Clean Beauty market, creating a competitive landscape that includes ingredient suppliers as well as consumer goods companies, such as Procter & Gamble and Estee Lauder. Most skincare ingredients are derived from plant and animal sources or created using chemical synthesis. Plant- and animal-sourced ingredients are typically higher in cost, lower in purity and have a greater impact on the environment versus our products. Products derived from chemical synthesis are often produced at a low cost but have ramifications on sustainability as well as non-natural sourcing. There are also companies that are working to develop products using similar technology to us.

***Competitive Factors***

We believe the primary competitive factors in our target markets are:

- product price;
- product performance and other measures of quality;
- product cost;
- infrastructure compatibility of products;
- sustainability; and

- dependability of supply.

We believe that, for our products to succeed in the market, we must demonstrate that our products are comparable or better alternatives to existing products and to any alternative products that are being developed for the same markets based on some combination of product cost, pricing, availability, performance, and consumer preference characteristics.

**Regulatory Matters**

***Environmental Regulations***

Our development and production processes involve the use, generation, handling, storage, transportation and disposal of hazardous chemicals and radioactive and biological materials. We are subject to a variety of federal, state, local and international laws, regulations and permit requirements governing the use, generation, manufacture, transportation, storage, handling and disposal of these materials in the United States, Brazil, Europe, China and other countries where we operate or may operate or sell our products in the future. These laws, regulations and permits can require expensive fees, pollution control equipment or operational changes to limit actual or potential impact of our technology on the environment and violation of these laws could result in significant fines, civil sanctions, permit revocation or costs from environmental remediation. We believe we are currently in substantial compliance with applicable environmental regulations and permitting. However, future developments including the commencement of or changes in the processes relating to commercial manufacturing of one or more of our products, more stringent environmental regulation, policies and enforcement, the implementation of new laws and regulations or the discovery of unknown environmental conditions may require expenditures that could have a material adverse effect on our business, results of operations or financial condition. See "*Risk Factors - Risks Relating to Our Business - We may incur significant costs to comply with environmental laws and regulations, and failure to comply with these laws and regulations could expose us to significant liabilities*."

***GMM Regulations***

The use of genetically modified microorganisms (GMMs), such as our yeast strains, is subject to laws and regulations in many countries. In the United States, the Environmental Protection Agency (EPA) regulates the commercial use of GMMs as well as potential industrial products produced from the GMMs. Various states within the United States could choose to regulate products made with GMMs as well. While the strain of genetically modified yeast that we use, *S. cerevisiae*, is eligible for exemption from EPA review because it is generally recognized as safe, we must satisfy certain criteria to achieve this exemption, including but not limited to, use of compliant containment structures and safety procedures. In Brazil, GMMs are regulated by the National Biosafety Technical Commission (CTNBio) under its Biosafety Law No. 11.105-2005. We have obtained commercial approvals from CTNBio to use our GMMs in a contained environment in our Brazil facilities for research and development purposes, in manufacturing and at contract manufacturing facilities in Brazil.

We expect to encounter GMM regulations in most if not all of the countries in which we may seek to make our products; however, the scope and nature of these regulations will likely vary from country to country. In addition, such regulations may change over time. If we cannot meet the applicable requirements in countries in which we intend to produce our products using our yeast strains, then our business will be adversely affected. See "*Risk Factors - Risks Related to Our Business - Our use of genetically modified feedstocks and yeast strains to produce our products subjects us to risks of regulatory limitations and rejection of our products*."

***Chemical Regulations***

Our renewable products may be subject to government regulations in our target markets. In the United States, the EPA administers the requirements of the Toxic Substances Control Act (TSCA), which regulates the commercial registration, distribution and use of many chemicals. Before an entity can manufacture or distribute significant volumes of a chemical, it needs to determine whether that chemical is listed in the TSCA inventory. If the substance is listed, then manufacture or distribution can commence immediately. If not, then in most cases a "Chemical Abstracts Service" number registration and pre-manufacture notice must be filed with the EPA, which has 90 days to review the filing. A similar requirement exists in Europe under the Registration, Evaluation, Authorization and Restriction of Chemical Substances (REACH) regulation. See "*Risk Factors - Risks Related to Our Business - We may not be able to obtain regulatory approval for the sale of our renewable products*." In 2013, the EPA registered farnesane as a new chemical substance under the TSCA, which enables us to manufacture and sell farnesane without restriction in the United States.

***Other Regulations***

Certain of our current or emerging products in the Health & Wellness, Clean Beauty, and Flavor & Fragrance markets, including alternative sweeteners, nutraceuticals, Flavor & Fragrance ingredients, skincare ingredients, cosmetic actives, and our proposed cannabinoid products, are subject to regulation by either the FDA or the Drug Enforcement Administration (DEA) or both, as well as similar agencies of states and foreign jurisdictions where these products are manufactured, sold or proposed to be sold. Pursuant to the Federal Food, Drug, and Cosmetic Act (the FDCA), the FDA regulates the processing, formulation, safety, manufacture, packaging, labeling and distribution of food ingredients, vitamins, and cosmetics. Generally, in order to be marketed and sold in the United States, a relevant product must be generally recognized as safe, approved and not adulterated or misbranded under the FDCA and relevant regulations issued thereunder. The FDA has broad authority to enforce the provisions of the FDCA applicable to food ingredients, vitamins, drugs and cosmetics, including powers to issue a public warning letter to a company, to publicize information about illegal products, to request a recall of illegal products from the market, and to request the United States Department of Justice to initiate a seizure action, an injunction action, or a criminal prosecution in the U. S. courts. Failure to obtain requisite approval from, or comply with the laws and regulations of, the FDA or similar agencies of states and applicable foreign jurisdictions could prevent us from fully commercializing certain of our products. See "*Risk Factors - Risks Related to Our Business - We may not be able to obtain regulatory approval for the sale of our renewable products*." Our proposed cannabinoid products may also be subject to regulation under various federal, state and foreign-controlled substance laws and regulations. See "*Risk Factors - Our cannabinoid initiative is uncertain and may not yield commercial results and is subject to significant regulatory risks*."

In addition, our end-user products such as our Biossance and Pipette brands clean skincare products will be subject to the Natural Cosmetics/Personal Care Products Safety Act, if enacted. Cosmetic products are regulated by or under the FDA's oversight. Also, our end-user products are subject to the regulations of the United States Federal Trade Commission (FTC) and similar agencies of states and foreign jurisdictions where these products are sold or proposed to be sold regarding the advertising of such products. In recent years, the FTC has instituted numerous enforcement actions against companies for failure to have adequate substantiation for claims made in advertising or for the use of false or misleading advertising claims. The FTC has broad authority to enforce its laws and regulations applicable to cosmetics, including the ability to institute enforcement actions which often result in consent decrees, injunctions, and the payment of civil penalties by the companies involved. Failure to comply with the laws and regulations of the FTC or similar agencies of states and applicable foreign jurisdictions could impair our ability to market our end-user products.

**Employees**

As of December 31, 2019, we had 561 full-time employees, of whom 440 were in the United States, 103 were in Brazil and 18 were in Portugal. Except for labor union representation for Brazil-based employees based on labor code requirements in Brazil, none of our employees is represented by a labor union or is covered by a collective bargaining agreement. We have never experienced any employment-related work stoppages, and we consider relations with our employees to be good.

**Corporate Information**

We were originally incorporated in California in 2003 under the name Amyris Biotechnologies, Inc. and then reincorporated in Delaware in 2010 and changed our name to Amyris, Inc. Our principal executive offices are located at 5885 Hollis Street, Suite 100, Emeryville, California 94608, and our telephone number is (510) 450-0761. Our common stock is listed on The Nasdaq Global Select Market under the symbol "AMRS".

**Available Information**

Our website address is www.amyris.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and other reports filed pursuant to Sections 13(a) and 15(d) of the Securities Exchange Act of 1934 (the Exchange Act), as well as amendments thereto, are filed with the U.S. Securities and Exchange Commission (the SEC) and are available free of charge on our website at investors.amyris.com promptly after such reports are available on the SEC's website. We may use our investors.amyris.com website as a means of disclosing material non-public information and complying with our disclosure obligations under Regulation FD.

The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

The information contained in or accessible through our website or contained on other websites is not incorporated into this filing. Further, any references to URLs contained in this report are intended to be inactive textual references only.

**ITEM 1A. RISK FACTORS**

*Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below, together with all of the other information set forth in this Annual Report on Form 10-K, including the consolidated financial statements and related notes, which could materially affect our business, financial condition or future results. If any of the following risks actually occurs, our business, financial condition, results of operations and future prospects could be materially and adversely harmed. The trading price of our common stock could decline due to any of these risks, and, as a result, you may lose all or part of your investment.*

**Risks Related to Our Business**

***We have identified a material weakness in our internal control over financial reporting which, if not corrected, could affect the reliability of our consolidated financial statements and have other adverse consequences.***

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) under the Exchange Act. Section 404 of the Sarbanes-Oxley Act of 2002 (Section 404) and related SEC rules require management to assess the effectiveness of our internal control over financial reporting. Based on the assessment as of December 31, 2019, our management believes that our internal control over financial reporting was not effective at that date due to a material weakness we identified. A material weakness is a deficiency, or combination of control deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

Based on management's assessment, we have identified the following material weakness:

- We did not have an effective internal and external information and communication process to ensure that relevant and reliable information was communicated timely across the organization, to enable financial personnel to effectively carry out their financial reporting and internal control roles and responsibilities.

As a consequence of the ineffective communication components, we did not design, implement, and maintain effective control activities at the transaction level over debt-related liability accounts to mitigate the risk of material misstatement in financial reporting, specifically:

- We did not design and operate effective controls over significant non-routine transactions related to certain debt-related contractual obligations.

Control deficiencies in 2017 and 2018 contributed to the restatement of our audited consolidated financial statements for the year ended December 31, 2017 and resulted in material errors to our interim condensed consolidated financial statements for the quarterly and year-to-date periods ended March 31, 2017, June 30, 2017, September 30, 2017, March 31, 2018, June 30, 2018 and September 30, 2018. Also, a control deficiency in 2019 contributed to a material misstatement, as described above, to the preliminary unissued consolidated financial statements as of and for the three and nine months ended September 30, 2019. While the material misstatement was corrected prior to the issuance of the condensed consolidated financial statements as of and for the three and nine months ended September 30, 2019, we concluded this control deficiency was a material weakness and our internal control over financial reporting was not effective as of December 31, 2019, and creates a reasonable possibility that a further material misstatement of our annual or interim consolidated financial statements would not be prevented or detected on a timely basis.

See Part II, Item 9A “Controls and Procedures” of this Annual Report on Form 10-K for additional information. If not remediated, the material weakness could result in further material misstatements to our annual or interim consolidated financial statements that would not be prevented or detected on a timely basis, or in delayed filing of required periodic reports. Our management has developed, and begun to implement, a plan to remediate the material weakness. We cannot, however, assure you that we will be able to implement the plan, or to remediate the material weakness in a timely manner. Furthermore, during the course of re-design of existing processes and controls, implementation of additional processes and controls and testing of the operating effectiveness of such re-designed and additional processes and controls, we may identify additional control deficiencies that could give rise to other material weaknesses, in addition to the currently identified material weakness. We expect the remediation plan to extend over multiple financial reporting periods in 2020. If our remedial measures are insufficient to address the material weakness, or if additional material weaknesses or significant deficiencies in our internal controls are discovered or occur in the future, we may be unable to report our financial results accurately or on a timely basis, which could cause our reported financial results to be materially misstated and result in the loss of investor confidence and adversely affect the market price of our common stock and our ability to access the capital markets, and we could be subject to sanctions or investigations by the Nasdaq Stock Market (Nasdaq), the SEC or other regulatory authorities.

***If we fail to maintain an effective system of internal controls, we may not be able to report our financial results accurately or in a timely manner or prevent fraud; in that case, our stockholders could lose confidence in our financial reporting, which would harm our business and could negatively impact the price of our stock.***

Effective internal controls are necessary for us to provide reliable financial reports and help us to prevent fraud. In addition, Section 404 of the Sarbanes-Oxley Act of 2002 (Section 404) requires us and our independent registered public accounting firm to evaluate and report on our internal control over financial reporting. The process of implementing our internal controls and complying with Section 404 is expensive and time consuming, and requires significant continuous attention of management. We cannot be certain that these measures will ensure that we maintain adequate controls over our financial processes and reporting in the future. In addition, to the extent we create joint ventures or have any variable interest entities and the financial statements of such entities are not prepared by us, we will not have direct control over their financial statement preparation. As a result, we will, for our financial reporting, depend on what these entities report to us, which could result in us adding monitoring and audit processes to those operations and increase the difficulty of implementing and maintaining adequate internal control over our financial processes and reporting in the future, which could lead to delays in our external reporting. In particular, this may occur in instances in which where we are establishing such entities with commercial partners that do not have sophisticated financial accounting processes in place, or where we are entering into new relationships at a rapid pace, straining our integration capacity. Additionally, if we do not receive the information from the joint venture or variable interest entity on a timely basis, it could cause delays in our external reporting. Even if we conclude in the future, and our independent registered public accounting firm concurs, that our internal control over financial reporting provides reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles, because of its inherent limitations, internal control over financial reporting may not prevent or detect fraud or misstatements. Failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm our results of operations or cause us to fail to meet our reporting obligations, which could reduce the market's confidence in our financial statements and harm our stock price. In addition, failure to comply with Section 404 could subject us to a variety of administrative sanctions, including SEC action, the suspension or delisting of our common stock from the stock exchange on which it is listed, and the inability of registered broker-dealers to make a market in the Company's common stock, which could further reduce our stock price and could harm our business.

***We have incurred losses to date, anticipate continuing to incur losses in the future, and may never achieve or sustain profitability.***

We have incurred significant operating losses since our inception, and we expect to continue to incur losses and negative cash flows from operations for at least the next 12 months following the issuance of this Annual Report on Form 10-K. As of December 31, 2019, we had negative working capital of $87.5 million and an accumulated deficit of $1.8 billion.

As of December 31, 2019, our debt, net of a $20.3 million debt discount and a $15.4 million fair value adjustment, totaled $261.8 million, of which $63.8 million is classified as current. Our debt agreements contain various covenants, including certain restrictions on our business that could cause us to be at risk of contractual defaults, such as restrictions on additional indebtedness, material adverse effect and cross default clauses. A failure to comply with the covenants and other provisions of our debt instruments, including any failure to make a payment when required, would generally result in events of default under such instruments, which could permit acceleration of a substantial portion of such indebtedness. If such indebtedness is accelerated, it would generally also constitute an event of default under our other outstanding indebtedness, permitting acceleration of a substantial portion of such other outstanding indebtedness. We have in the past, including in July 2019, had certain of our debt instruments accelerated for failure to make a payment when due. While we have been able to cure these defaults to date to avoid additional cross-acceleration, we may not be able to cure such a default promptly in the future. See Note 15, "Subsequent Events" in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

Our cash and cash equivalents of $0.3 million as of December 31, 2019 is not sufficient to fund expected future negative cash flows from operations and cash debt service obligations through March 31, 2021. These factors raise substantial doubt about our ability to continue as a going concern within one year after the date that these financial statements are issued. The financial statements do not include any adjustments that might result from the outcome of this uncertainty. Our ability to continue as a going concern will depend, in large part, on our ability to raise additional proceeds through financings, achieve positive cash flows from operations during the 12 months from the date of this filing, and refinance or extend other existing debt maturities currently past due and those occurring later in 2020, all of which is uncertain and outside our control. Further, our operating plan for 2020 contemplates a significant reduction in our net operating cash outflows as compared to the year ended December 31, 2019, resulting from (i) revenue growth from sales of existing and new products with positive gross margins, (ii) reduced production costs as a result of manufacturing and technical developments, (iii) reduced spending in general and administrative areas, and (iv) cash inflows from collaborations and grants. If we are unable to complete these actions, we expect to be unable to meet our operating cash flow needs and our obligations under our existing debt facilities.

This could result in an acceleration of our obligation to repay all amounts outstanding under those facilities, and the Company may be forced to obtain additional equity or debt financing, which may not occur timely or on reasonable terms, if at all, and/or liquidate our assets. In such a scenario, the value received for assets in liquidation or dissolution could be significantly lower than the value reflected in these financial statements.

Our consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty, which could have a material adverse effect on our financial condition and cause investors to suffer the loss of all or a substantial portion of their investment.

***We will require significant cash inflows from the sales of renewable products, licenses and royalties, and grants and collaborations and, if needed, financings to fund our anticipated operations and to service our debt obligations and may not be able to obtain such funding on favorable terms, if at all.***

Our planned working capital needs and operating and capital expenditures for 2020, and our ability to service our outstanding debt obligations, are dependent on significant inflows of cash from grants and collaborations, licenses and royalties, and product sales and, if needed, additional financing arrangements. We will continue to need to fund our research and development and related activities and to provide working capital to fund production, procurement, storage, distribution and other aspects of our business. Some of our anticipated funding sources, such as research and development collaborations, are subject to the risks that we may not be able to meet milestones, or that collaborations may end prematurely for reasons that may be outside of our control (including technical infeasibility of the project or a collaborator's right to terminate without cause). The inability to generate sufficient cash flow, as described above, could have an adverse effect on our ability to continue with our business plans and our status as a going concern.

If we are unable to raise additional funding, or if other expected sources of funding are delayed or not received, our ability to continue as a going concern would be jeopardized and we would take the following actions:

- Shift focus to existing products and customers with significantly reduced investment in new product and commercial development efforts;
- Reduce expenditures for third party contractors, including consultants, professional advisors and other vendors;
- Reduce or delay uncommitted capital expenditures, including expenditures related the construction and commissioning of the new production facility in Brazil, nonessential facilities and lab equipment, and information technology projects; and
- Closely monitor our working capital position with customers and suppliers, as well as suspend operations at pilot plants and demonstration facilities.

Implementing this plan could have a negative impact on our ability to continue our business as currently contemplated, including, without limitation, delays or failures in our ability to:

- Achieve planned production levels;
- Develop and commercialize products within planned timelines or at planned scales; and
- Continue other core activities.

Furthermore, any inability to scale-back operations as necessary, and any unexpected liquidity needs, could create pressure to implement more severe measures. Such measures could have an adverse effect on our ability to meet contractual requirements and increase the severity of the consequences described above.

***Our existing financing arrangements provide our secured lenders with liens on substantially all of our assets, including our intellectual property, and contain financial covenants and other restrictions on our actions, which may cause significant risks to our stockholders and may impact our ability to pursue certain transactions and operate our business.***

As of December 31, 2019, our debt, net of a $20.3 million debt discount and a $15.4 million fair value adjustment, totaled $261.8 million, of which $63.8 million is classified as current. Our cash balance is substantially less than the principal amount of our outstanding debt, and we will be required to generate cash from operations and raise additional working capital through future financings or sales of assets to enable us to repay this indebtedness as it becomes due. There can be no assurance that we will be able to do so.

In addition, we have granted liens on substantially all of our assets, including our intellectual property, as collateral in connection with certain financing arrangements with a current aggregate principal amount outstanding of $133.2 million, and have agreed to significant covenants in connection with such transactions (see Note 4, "Debt" in Part II, Item 8 of this Annual Report on Form 10-K), including covenants that materially limit our ability to take certain actions, including our ability to pay dividends, make certain investments and other payments, incur additional indebtedness, undertake certain mergers and

consolidations, and encumber and dispose of assets, and customary events of default, including failure to pay amounts due, breaches of covenants and warranties, material adverse effect events, certain cross defaults and judgements, and insolvency. For example, the loan and security agreements relating to our secured term loan credit facilities that closed in June 2018 and August 2019 (as further amended and restated in October 2019) prevent us from incurring additional indebtedness, making investments, encumbering our assets, engaging in certain corporate transactions, such as mergers and consolidations, and transferring or otherwise disposing of assets, subject in each case to certain exceptions, and also require us to maintain certain liquidity and asset coverage levels and meet certain revenue requirements. A failure to comply with the covenants and other provisions of our debt instruments, including any failure to make a payment when required, would generally result in events of default under such instruments, which could permit acceleration of such indebtedness and could result in a material adverse effect on us. If such indebtedness is accelerated, it would generally also constitute an event of default under our other outstanding indebtedness, permitting acceleration of a substantial portion of our indebtedness. Any required repayment of our indebtedness as a result of acceleration or otherwise would lower our current cash on hand such that we would not have those funds available for use in our business or for payment of other outstanding indebtedness.

If we are at any time unable to generate sufficient cash flow from operations to service our indebtedness when payment is due, we may be required to attempt to renegotiate the terms of the instruments relating to the indebtedness, seek to refinance all or a portion of the indebtedness or obtain additional financing. There can be no assurance that we would be able to successfully renegotiate such terms, that any such refinancing would be possible or that any additional financing could be obtained on terms that are favorable or acceptable to us, if at all. Any debt financing that is available could cause us to incur substantial costs and subject us to covenants that significantly restrict our ability to conduct our business. If we seek to complete additional equity financings, the interests of existing equity holders may be diluted. If we are unable to make payment on our secured debt instruments when due, the lenders under such instruments may foreclose on and sell the assets securing such indebtedness to satisfy our payment obligations, which could prevent us from accessing those assets for our business and conducting our business as planned, which could materially harm our financial condition and results of operations.

In addition, certain of our outstanding securities contain anti-dilution adjustment provisions that may be triggered by future issuances of equity or equity-linked instruments in financing transactions. If such adjustment provisions are triggered, the conversion or exercise price of such securities will decrease and/or the number of shares issuable upon conversion or exercise of such securities will increase. In such event, existing stockholders will be further diluted and the effective issuance price of such equity or equity-linked instruments will be reduced, which may harm our ability to engage in future financing transactions to fund our business.

***Our substantial leverage may place us at a competitive disadvantage in our industry.***

We continue to have substantial debt outstanding and we may incur additional indebtedness from time to time to finance working capital, product development efforts, strategic acquisitions, investments and partnerships, or capital expenditures, or for other general corporate purposes, subject to the restrictions contained in our debt agreements. Our significant indebtedness and debt service requirements could adversely affect our ability to operate our business and may limit our ability to take advantage of potential business opportunities. For example, our high level of indebtedness presents the following risks:

- we will be required to use a substantial portion of our cash flow from operations to pay principal and interest on our indebtedness, thereby reducing the availability of our cash flow to fund working capital, capital expenditures, product development efforts, acquisitions, investments and strategic alliances and for other general corporate requirements;
- our substantial leverage increases our vulnerability to economic downturns and adverse competitive and industry conditions and could place us at a competitive disadvantage compared to those of our competitors that are less leveraged;
- our debt service obligations could limit our flexibility in planning for, or reacting to, changes in our business and our industry and could limit our ability to pursue other business opportunities, borrow more money for operations or capital in the future and implement our business strategies;
- our level of indebtedness and the covenants in our debt instruments may restrict us from raising additional financing on satisfactory terms to fund working capital, capital expenditures, product development efforts, strategic acquisitions, investments and alliances, and for other general corporate requirements;
- our secured loan agreements restrict our ability to grant additional liens on our assets, which may make it more difficult to secure additional financing in the future; and
- our substantial leverage may make it difficult for us to attract additional financing when needed.

***We are currently ineligible to use a registration statement on Form S-3 to register the offer and sale of securities, which could adversely affect our ability to raise future capital.***

As a result of the delayed filing of our Annual Report on Form 10-K for the year ended December 31, 2018, our Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2019 and our Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2019 with the SEC, we will not be eligible to register the offer and sale of our securities using a registration statement on Form S-3 until one year from the date we regain and maintain status as a current filer. Should we wish to register the offer and sale of our securities to the public prior to the time we are eligible to use Form S-3, both our transaction costs and the amount of time required to complete the transaction could increase, potentially harming our financial condition.

***Future revenues are difficult to predict, and our failure to predict revenue accurately may cause our results to be below our expectations or those of analysts or investors and could result in our stock price declining.***

Our revenues are comprised of product revenues, licenses and royalties revenues, and grants and collaborations revenues. We generate the substantial majority of our product revenues from sales to collaboration partners and distributors, and only a small portion from direct sales. Our collaboration, supply and distribution agreements do not usually include any specific purchase obligations. The sales volume of our products in any given period has been difficult to predict. A significant portion of our product sales is dependent upon the interest and ability of third-party distributors to create demand for, and generate sales of, such products to end-users. For example, if such distributors are unsuccessful in creating pull-through demand for our products with their customers, such distributors may purchase less of our products from us than we expect. Also, under revenue recognition rules, we are required to estimate royalties. These estimates could be subject to material adjustment in subsequent periods.

In addition, many of our new and novel products are intended to be a component of other companies' products; therefore, sales of our products may be contingent on our collaboration partners and/or customers' timely and successful development and commercialization of end-use products that incorporate our products, and price volatility in the markets for such end-use products, which may include commodities, could adversely affect the demand for our products and the margin we receive for our product sales, which could harm our financial results. While we maintain certain clawback rights to our technology in the event our collaboration partners are unable or unwilling to commercialize the products we create for them, we may be restricted from or unable to market or sell such products or technologies to other potential collaboration partners, which could hinder the growth of our business. In addition, certain of our collaboration partners have the right to terminate their agreements with us if we undergo a change of control or a sale of our business, which could discourage a potential acquirer from making an offer to acquire us.

Further, we have in the past entered into, and expect in the future to enter into, research and development collaboration arrangements pursuant to which we receive payments from our collaboration partners. Some of such collaboration arrangements include advance payments in consideration for grants of exclusivity or research and development activities to be performed by us. It has in the past been difficult for us to know with certainty when we will sign a new collaboration arrangement and receive payments thereunder. In addition, a portion of the advance payments we receive under our collaboration agreements is typically classified as contract liabilities and recognized over multiple quarters or years. As a result, achievement of our quarterly and annual financial goals has been difficult to forecast with certainty. Once a collaboration agreement has been signed, receipt of cash payments and/or recognition of related revenues may depend on our achievement of research, development, production or cost milestones, which may be difficult to predict. Our collaboration arrangements may also include future royalty payments upon commercialization of the products subject to the collaboration arrangements, which is uncertain and depends in part on the success of the counterparty in commercializing the relevant product. As a result, our receipt of royalty revenues and the timing thereof is difficult to predict with certainty.

Furthermore, we market and sell some of our products directly to end-consumers, initially in the cosmetics market. Because we have limited experience in marketing and selling directly to consumers, it is difficult to predict how successful our efforts will be and we may not achieve the product sales we expect to achieve on the timeline we anticipate, if at all. These factors have made it difficult to predict future revenues and have resulted in our revenues being below our previously announced guidance or analysts' estimates. We continue to face these risks in the future, which may cause our stock price to decline.

***Our financial results could vary significantly from quarter to quarter and are difficult to predict.***

Our revenues and results of operations could vary significantly from quarter to quarter because of a variety of factors, many of which are outside of our control. As a result, comparing our results of operations on a period-to-period basis may not be meaningful. Factors that could cause our quarterly results of operations to fluctuate include:

- achievement, or failure, with respect to technology, product development or manufacturing milestones needed to allow us to enter identified markets on a cost-effective basis or obtain milestone-related payments from collaboration partners;

- delays or greater than anticipated expenses associated with the completion, commissioning, acquisition or retrofitting of new production facilities, or the time to ramp up and stabilize production at a new production facility or the transition (including ramp up) to producing new molecules at existing facilities or with a new contract manufacturer;
- impairment of assets based on shifting business priorities and working capital limitations;
- disruptions in the production process at any manufacturing facility, including disruptions due to seasonal or unexpected downtime as a result of feedstock availability, contamination, safety or other technical difficulties, or scheduled downtime as a result of transitioning equipment to the production of different molecules;
- losses of, or the inability to secure new, major customers, collaboration partners, suppliers or distributors;
- losses associated with producing our products as we ramp to commercial production levels;
- failure to recover value added tax (VAT) that we currently reflect as recoverable in our financial statements (e.g., due to failure to meet conditions for reimbursement of VAT under local law);
- the timing, size and mix of product sales to customers;
- increases in price or decreases in availability of feedstock;
- the unavailability of contract manufacturing capacity altogether or at reasonable cost;
- exit costs associated with terminating contract manufacturing relationships;
- fluctuations in foreign currency exchange rates;
- change in the fair value of derivative instruments;
- fluctuations in the price of and demand for sugar, ethanol, petroleum-based and other products for which our products are alternatives;
- seasonal variability in production and sales of our products;
- competitive pricing pressures, including decreases in average selling prices of our products;
- unanticipated expenses or delays associated with changes in governmental regulations and environmental, health, labor and safety requirements;
- departure of executives or other key management employees resulting in transition and severance costs;
- our ability to use our net operating loss carryforwards to offset future taxable income;
- business interruptions such as earthquakes, tsunamis and other natural disasters, including pandemics;
- our ability to integrate businesses that we may acquire;
- our ability to successfully collaborate with joint venture partners;
- risks associated with the international aspects of our business; and
- changes in general economic, industry and market conditions, both domestically and in our foreign markets.

Due to the factors described above, among others, the results of any quarterly or annual period may not meet our expectations or the expectations of our investors and may not be meaningful indications of our future performance.

***A limited number of customers, collaboration partners and distributors account for a significant portion of our revenues, and the loss of major customers, collaboration partners or distributors could harm our operating results.***

Our revenues have varied significantly from quarter to quarter and are dependent on sales to, and collaborations with, a limited number of customers, collaboration partners and/or distributors. We cannot be certain that customers, collaboration partners and/or distributors that have accounted for significant revenues in past periods, individually or as a group, will continue to generate similar revenues in any future period. If we fail to renew with, or if we lose, a major customer, collaborator or distributor, or group of customers, collaboration partners or distributors, our revenues could decline if we are unable to replace the lost revenues with revenues from other sources. Further, since our business depends in part on such collaboration agreement, it may be difficult for us to replace any such lost revenues through additional collaborations in any period, as revenue from such new collaborations will often be recognized over multiple quarters or years.

***If we do not meet technical, development and commercial milestones in our collaboration agreements, our future revenues and financial results will be adversely impacted.***

We have entered into a number of agreements regarding the development of certain of our products and, in some cases, for ultimate sale of certain products to the customer under the agreement. Most of these agreements do not affirmatively obligate the other party to purchase specific quantities of any products, and most contain important conditions that must be satisfied before additional research and development funding or product purchases would occur. These conditions include research and development milestones and technical specifications that must be achieved to the satisfaction of our collaboration partners, which we cannot be certain we will achieve. If we do not achieve these contractual milestones or specifications, our revenues and financial results will be adversely affected.

***We face challenges producing our products at commercial-scale or at reduced cost and may not be able to commercialize our products to the extent necessary to make a profit or sustain and grow our current business.***

To commercialize our products, we must be successful in using our yeast strains to produce target molecules at commercial-scale and at a commercially viable cost. If we cannot achieve commercially-viable production economics for enough products to support our business plan, including through establishing and maintaining sufficient production-scale and volume, we will be unable to achieve a sustainable products business.

In order to be competitive in the markets we are targeting, our products must have superior qualities or be competitively priced relative to alternatives available in the market. Our production costs depend on many factors that could have a negative effect on our ability to offer our planned products at competitive prices, including, in particular, our ability to establish and maintain sufficient production scale and volume, and feedstock and contract manufacturing costs.

We face financial risk associated with scaling up production to reduce our production costs. To reduce per-unit production costs, we must increase production to achieve economies of scale and to be able to sell our products with positive margins. However, if we do not sell production output in a timely manner or in sufficient volumes, our investment in production will harm our cash position and generate losses. Additionally, we may incur added costs in storage and we may face issues related to the decrease in quality of our stored products, which could adversely affect the value of such products. Since achieving competitive product prices generally requires increased production volumes and our manufacturing operations and cash flows from sales are in their early stages, we have had to produce and sell products at a loss in the past, and may continue to do so as we build our business. If we are unable to achieve adequate revenues from a combination of product sales and other sources, we may not be able to invest in production and we may not be able to pursue our business plans. In addition, in order to attract potential collaboration or joint venture partners, or to meet payment milestones under existing or future collaboration agreements, we have in the past and may in the future be required to guarantee or meet certain levels of production costs. If we are unable to reduce our production costs to meet such guarantees or milestones, our net cash flow will be further reduced.

***If we are not able to successfully commence, scale-up or sustain operations at existing and planned manufacturing facilities, our customer relationships, business and results of operations may be adversely affected.***

A substantial component of our planned production capacity in the near and long term depends on successful operations at our existing and potential large-scale production plants. We commenced operations at our first purpose-built, large-scale production facility located in Brotas, Brazil in 2012. In December 2016, we acquired a production facility in Leland, North Carolina, which facility had been previously operated by our partner Glycotech Inc. to perform chemical conversion and production of certain of our end-products, and which facility was subsequently transferred to our joint venture with Nikko, as further described in Note 10, “Related Party Transactions” in Part II, Item 8 of this Annual Report on Form 10-K. In December 2017, we sold the Brotas facility to DSM and concurrently entered into a supply agreement with DSM for us to purchase output from the facility, which represents a significant portion of our expected supply needs (see Note 12, “Divestiture”, Note 9, "Revenue Recognition" and Note 10, "Related Party Transactions" in Part II, Item 8 of this Annual Report on Form 10-K for more information). We are building a new purpose-built, large-scale specialty ingredients plant in Brazil, which we anticipate will allow for the manufacture of five products concurrently and to produce both our specialty ingredients portfolio and our alternative sweetener product. We currently anticipate facility construction to be completed in the second quarter of 2021; however, there can be no assurances that we will be able to complete such facility on our expected timeline, if at all. In addition, in May 2019 we entered into a joint venture agreement with Raizen for the production, sale and commercialization of alternative sweetener products, pursuant to which the parties would construct a manufacturing facility exclusively for alternative sweetener products on land owned by Raizen and leased to the joint venture. The consummation of the transactions contemplated by the opportunity to launch a joint venture with Raizen, including the construction of a manufacturing facility for the production of alternative sweetener products, is subject to conditions, including certain regulatory approvals and the achievement of certain technological and economic milestones relating to the production of our alternative sweetener product, and there can be no assurances that the construction of such facility will occur on our expected timeline, if at all. Delays or problems in the construction, start-up or operation of such facilities could cause delays in our ramp-up of production and hamper our ability to reduce our production costs. Delays in construction can occur due to a variety of factors, including regulatory requirements and our ability to fund construction and commissioning costs.

Once our large-scale production facilities are built, acquired or retrofitted, we must successfully commission them, if necessary, and they must perform as we expect. If we encounter significant delays, cost overruns, engineering issues, contamination problems, equipment or raw material supply constraints, unexpected equipment maintenance requirements, safety issues, work stoppages or other serious challenges in bringing these facilities online and operating them at commercial-scale, we may be unable to produce our renewable products in the time frame and at the cost we have planned. It is difficult to predict the effects of scaling up production of industrial fermentation to commercial-scale, as it involves various risks to the quality and consistency of our molecules. In addition, in order to produce molecules at existing and potential future plants, we have been and may in the future be required to perform thorough transition activities, and modify the design of the plant. Any

modifications to the production plant could cause complications in the operations of the plant, which could result in delays or failures in production. If any of these risks occur, or if we are unable to create or obtain additional manufacturing capacity necessary to meet existing and potential customer demand, we may need to continue to use, or increase our use of, contract manufacturing sources, which may not be available on terms acceptable to us, if at all, and generally entail greater cost to us to produce our products and would therefore reduce our anticipated gross margins and may also prevent us from accessing certain markets for our products. Further, if our efforts to increase (or commence, as the case may be) production at these facilities are not successful, our partners may decide not to work with us to develop additional production facilities, demand more favorable terms or delay their commitment to invest capital in our production. If we are unable to create and sustain manufacturing capacity and operations sufficient to satisfy the existing and potential demand of our customers and partners, our business and results of operations may be adversely affected.

In addition, the production of our products at our planned purpose-built, large-scale production facilities will require large volumes of feedstock. For our planned large-scale production facilities in Brazil, we plan to rely primarily on Brazilian sugarcane. While in certain cases we have entered into feedstock agreements with suppliers, including Raizen, which we expect to supply the sugarcane feedstock necessary to produce our products at our planned large-scale production facilities in Brazil, that specify the pricing, quantity and product specifications for our feedstocks, we cannot predict the future availability or price of these various feedstocks, nor can we be sure that our mill partners, including Raizen, will be able to supply it in sufficient quantities or in a timely manner. Furthermore, to the extent we are required to rely on sugar feedstock other than Brazilian sugarcane, the cost of such feedstock may be higher than we expect, increasing our anticipated production costs. Feedstock crop yields and sugar content depend on weather conditions, such as rainfall and temperature. Weather conditions have historically caused volatility in the ethanol and sugar industries by causing crop failures or reduced harvests. Excessive rainfall can adversely affect the supply of sugarcane and other sugar feedstock available for the production of our products by reducing the sucrose content and limiting growers' ability to harvest. Crop disease and pestilence can also occur from time to time and can adversely affect feedstock growth, potentially rendering useless or unusable all or a substantial portion of affected harvests. With respect to sugarcane, our initial primary feedstock, seasonal availability and price, the limited amount of time during which it keeps its sugar content after harvest, and the fact that sugarcane is not itself a traded commodity, increases these risks and limits our ability to substitute supply in the event of such an occurrence. If production of sugarcane or any other feedstock we may use to produce our products is adversely affected by these or other conditions, our production will be impaired, increasing costs to our operations and adversely affecting our business.

***Our use of contract manufacturers exposes us to risks relating to costs, contractual terms and logistics.***

In addition to our existing and planned production facilities discussed above, we must commercially produce, process and manufacture our products through the use of contract manufacturers, including DSM, and we anticipate that we will continue to use contract manufacturers for the foreseeable future. Establishing and operating contract manufacturing facilities requires us to make significant capital expenditures, which reduces our cash and places such capital at risk. Also, contract manufacturing agreements may contain terms that commit us to pay for capital expenditures and other costs and amounts incurred or expected to be earned by the plant operators and owners, which can result in contractual liability and losses for us even if we terminate a particular contract manufacturing arrangement or decide to reduce or stop production under such an arrangement. Further, we cannot be sure that contract manufacturers will be available when we need their services, that they will be willing to dedicate a portion of their capacity to our projects, or that we will be able to reach acceptable price, delivery and other terms with them for the provision of their production services.

The locations of contract manufacturers can pose additional cost, logistics and feedstock challenges. If production capacity is available at a plant that is remote from usable chemical finishing or distribution facilities, or from customers, we will be required to incur additional expenses in shipping products to other locations. Such costs could include shipping costs, compliance with export and import controls, tariffs and additional taxes, among others. In addition, we may be required to use feedstock from a particular region for a given production facility. The feedstock available in such region may not be the least expensive or most effective feedstock for production, which could significantly raise our overall production cost or reduce our product's quality until we are able to optimize the supply chain.

***Loss or termination of contract manufacturing relationships could harm our ability to meet our production goals.***

As discussed above, we rely on contract manufacturers, including DSM, to produce and/or provide downstream processing of our products, and we anticipate that we will need to use contract manufacturers for the foreseeable future. If we are unable to secure the services of contract manufacturers when and as needed, we may lose customer opportunities and the growth of our business may be impaired. If we shift priorities and adjust anticipated production levels (or cease production altogether) at contract manufacturing facilities, such adjustments or cessations could also result in disputes or otherwise harm our business relationships with contract manufacturers. In addition, reliance on external sources for our other target molecules

could create a risk for us if a single source or a limited number of sources of manufacturing runs into operational issues, creating risk of loss of sales and profitability. Reducing or stopping production at one facility while increasing or starting up production at another facility generally results in significant losses of production efficiency, which can persist for significant periods of time. Also, in order for production to commence under our contract manufacturing arrangements, we generally must provide equipment for such operations, and we cannot be assured that such equipment can be ordered or installed on a timely basis, at acceptable costs, or at all. Further, in order to establish operations at new contract manufacturing facilities, we need to transfer our yeast strains and production processes from our labs to commercial plants controlled by third parties, which may pose technical or operational challenges that delay production or increase our costs.

***Our ability to establish substantial commercial sales of our products is subject to many risks, any of which could prevent or delay revenue growth and adversely impact our customer relationships, business and results of operations.***

There can be no assurance that our products will be approved or accepted by customers, including customers of our branded products, or that we will be able to sell our products profitably at prices and with features sufficient to establish demand. The potential customers for our products generally have well developed manufacturing processes and arrangements with suppliers of the chemical components of their products and may have a resistance to changing these processes and components. These potential customers frequently impose lengthy and complex product qualification procedures on their suppliers, influenced by consumer preference, manufacturing considerations such as process changes and capital and other costs associated with transitioning to alternative components, supplier operating history, established business relationships and agreements, regulatory issues, product liability and other factors, many of which are unknown to, or not well understood by, us. Satisfying these processes may take many months. Similarly, customers of our branded products may have a resistance to accept our alternative compositions for such products. Additionally, we may be subject to product safety testing and may be required to meet certain regulatory and/or product safety standards. Meeting these standards can be a time consuming and expensive process, and we may invest substantial time and resources into such qualification efforts without ultimately securing approval. If we are unable to convince these potential customers, the consumers who purchase end-products containing our products and the customers of our direct to consumer products that our products are comparable to the chemicals that they currently use or that the use of our products is otherwise to their benefit, we will not be successful in entering these markets and our business will be adversely affected. Moreover, in order to successfully market our direct to consumer products, we must continue to build our sales, marketing, managerial, compliance, and related capabilities or make arrangements with third parties to perform these services. If we are unable to establish adequate sales, marketing, and distribution capabilities, whether independently or with third parties, we may not be able to appropriately commercialize such products.

***The price and availability of sugarcane and other feedstocks can be volatile as a result of changes in industry policy and may increase the cost of production of our products.***

In Brazil, Conselho dos Produtores de Cana-de-Açúcar, Açúcar e Etanol do Estado de São Paulo (Council of Sugarcane, Sugar and Ethanol Producers in the State of São Paulo, or "Consecana"), an industry association of producers of sugarcane, sugar and ethanol, sets market terms and prices for general supply, lease and partnership agreements for sugarcane. If Consecana makes changes to such terms and prices, it could result in higher sugarcane prices and/or a significant decrease in the volume of sugarcane available for the production of our products. In addition, if the availability of sugarcane juice or syrup or other feedstocks is restricted or limited due to weather conditions, land conditions or any other reason, we may not be able to manufacture our products in a timely or cost-effective manner, or at all, which would have a material adverse effect on our business.

***We expect to face competition for our products from existing suppliers, including from price declines in petroleum and petroleum-based products, and if we cannot compete effectively against these companies, products or prices, we may not be successful in bringing our products to market, demand for some of our renewable products may decline, or we may be unable to further grow our business.***

We expect that our renewable products will compete with both the traditional products that are currently being used in our target markets and with the alternatives to these existing products that established enterprises and new companies are seeking to produce. In the markets that we have entered, and in other markets that we may seek to enter in the future, we will compete primarily with the established providers of ingredients currently used in products in these markets. Producers of these incumbent products include global health and nutrition companies, large international chemical companies and companies specializing in specific products, such as flavor or fragrance ingredients, squalane or essential oils. We may also compete in one or more of these markets with products that are offered as alternatives to the traditional products being offered in these markets.

With the emergence of many new companies seeking to produce products from renewable sources, we may face increasing competition from such companies. As they emerge, some of these companies may be able to establish production

capacity and commercial partnerships to compete with us. If we are unable to establish production and sales channels that allow us to offer comparable products at attractive prices, we may not be able to compete effectively with these companies.

We believe the primary competitive factors in our target markets are:

- product price;
- product performance and other measures of quality;
- product cost;
- infrastructure compatibility of products;
- sustainability; and
- dependability of supply.

The global health and nutrition companies, large international chemical companies and companies specializing in specific products with whom we compete are much larger than us, have, in many cases, well developed distribution systems and networks for their products, have valuable historical relationships with the potential customers we are seeking to serve and have much more extensive sales and marketing programs in place to promote their products. In order to be successful, we must convince customers that our products are at least as effective as the traditional products they are seeking to replace and we must provide our products on a cost basis that does not greatly exceed these traditional products and other available alternatives. Some of our competitors may use their influence to impede the development and acceptance of renewable products of the type that we are seeking to produce.

While most of our products do not compete with, and do not serve as alternatives to, petroleum-based products, we anticipate that some of our renewable products will be marketed as alternatives to corresponding petroleum-based products. We believe that for our renewable products to succeed in the market, we must demonstrate that our products are comparable or better alternatives to existing products and to any alternative products that are being developed for the same markets based on some combination of product cost, availability, performance, and consumer preference characteristics.

***We are subject to risks related to our reliance on collaboration arrangements to fund development and commercialization of our products, and our financial results may be adversely impacted if we fail to meet technical, development or commercial milestones in such agreements.***

For most product markets we are seeking to enter, we have collaboration partners to fund the research and development, commercialization and production efforts required for the target products. Typically, we provide limited exclusive rights and revenue sharing with respect to the production and sale of particular products in specific markets in exchange for such up-front funding. These exclusivity, revenue-sharing and other similar terms limit our ability to commercialize our products and technology, and may impact the size of our business or our profitability in ways that we do not currently envision. In addition, most of these agreements do not affirmatively obligate the other party to purchase specific quantities of any products, and most contain important conditions that must be satisfied before additional research and development funding or product purchases would occur. These conditions include research and development programs and milestones, and technical specifications that must be achieved to the satisfaction of our collaboration partners. We may focus our efforts and resources on potential discovery efforts, product targets or candidates that require substantial technical, financial and human resources which we cannot be certain we will achieve.

In addition, we may encounter numerous uncertainties and difficulties in developing, manufacturing and commercializing any new products subject to these collaboration arrangements that may delay or prevent us from realizing their expected benefits or enhancing our business, including uncertainties on the feasibility of taking new molecules to commercial-scale. Any failure to successfully develop, produce and commercialize products under our existing and future collaboration arrangements could have a material adverse effect on our business, financial conditions, earnings and prospects.

Revenues from these types of relationships are a key part of our cash plan for 2020 and beyond. If we fail to collect expected collaboration revenues, or to identify and add sufficient additional collaborations to fund our planned operations, we may be unable to fund our operations or pursue development and commercialization of our planned products. To achieve our collaboration revenue targets from year to year, we may be obliged to enter into agreements that contain less favorable terms. Historically, the process of negotiating and finalizing collaboration arrangements with our partners has at times been lengthy and unpredictable. Furthermore, as part of our current and future collaboration arrangements, we may be required to make significant capital investments at our existing or planned production facilities in order to develop, produce and commercialize molecules or other products. Any failure or difficulties in maintaining existing collaboration arrangements or establishing new collaboration arrangements, or building up or retooling our operations to meet the demands of our collaboration partners could have a significant negative impact on our business, including our ability to achieve commercial viability for our products, lead

to the inability to meet our contractual obligations and could cause us to allocate or divert capital, personnel and other resources from our organization which could adversely affect our business and reputation.

***Our collaboration arrangements may restrict or prevent our future business activity in certain markets or industries, which could harm our ability to grow our business.***

As part of our collaboration arrangements in the ordinary course of business, we may grant to our partners exclusive rights with respect to the development, production and/or commercialization of particular products or types of products in specific markets in exchange for up-front funding and/or downstream royalty arrangements. These rights may inhibit potential collaboration or strategic partners or potential customers from entering into negotiations with us about further business opportunities, and we may be restricted or prevented from engaging with other partners or customers in those markets, which may limit our ability to grow our business or influence our strategic focus, and may lead to an inefficient allocation of capital resources.

In the past, we have had to grant concessions to existing partners in exchange for such partners waiving or modifying their exclusive rights with respect to a particular product, type of product or market so that we could engage with a third party with respect to such product, product type or market. There can be no assurance that existing partners will be willing to grant waivers of or modify their exclusive rights in the future on favorable terms, if at all. If we are unable to engage other potential partners with respect to particular products, product types or markets for which we have previously granted exclusive rights, our ability to grow our business would be harmed and our results of operations may be adversely affected.

***Certain rights we have granted to Total S.A., DSM and other existing stockholders, including in relation to our future securities offerings, could substantially impact our company.***

In connection with certain investments of Total S.A. (Total) in our company, our Certificate of Incorporation includes a provision that excludes Total from prohibitions on business combinations between us and an “interested stockholder.” This provision could have the effect of discouraging potential acquirers from making offers to acquire us, and give Total more access to Amyris than other stockholders if Total decides to pursue an acquisition.

In addition, each of Total, DSM, Vivo Capital LLC and Naxyris S.A. has the right to designate one or more directors to serve on our Board of Directors pursuant to agreements between us and such investors.

In May 2017, we entered into an agreement with DSM, which was amended and restated in August 2017, pursuant to which we agreed (i) that for as long as there is a DSM-designated director serving on our Board of Directors, we will not engage in certain commercial or financial transactions or arrangements without the consent of such director, and (ii) to provide DSM with certain exclusive negotiating rights in connection with certain future commercial projects and arrangements. These provisions could discourage other potential partners from approaching us with business opportunities, and could restrict, delay or prevent us from pursuing or engaging in such opportunities, which could adversely affect our business.

Additionally, in connection with their investments in Amyris, we granted certain investors, including DSM, a right of first investment if we propose to sell securities in certain financing transactions. With these rights, such investors may subscribe for a portion of any such new financing and require us to comply with certain notice periods, which could discourage other investors from participating in, or cause delays in our ability to close, such a financing.

***Our relationship with DSM exposes us to financial and commercial risks.***

In May 2017, DSM made an investment in our company and, in connection therewith, we entered into a stockholder agreement with DSM (subsequently amended) which provides DSM with certain rights, including the right to designate two members of our board of directors as well as exclusive negotiating rights in connection with certain future commercial projects and arrangements. Subsequently, in July and September 2017, we entered into collaboration agreements (and related license agreements) with DSM to jointly develop three new molecules in the Health and Nutrition field using the Company’s technology, which the Company would produce and DSM would commercialize. In December 2017, we completed the sale of our Brotas, Brazil production facility to DSM and, in connection therewith, entered into several commercial agreements with DSM, including a supply agreement to procure a substantial portion of our product supply requirements, and borrowed $25 million from DSM. For more information regarding these and other transactions and arrangements with DSM, please see Note 4, “Debt,” Note 6, “Stockholders’ Deficit,” Note 9, “Revenue Recognition”, Note 10, “Related Party Transactions” and Note 12, “Divestiture” in Part II, Item 8 of this Annual Report on Form 10-K.

There can be no assurance that our partnership with DSM will be successful, and the partnership may prevent us from pursuing other business opportunities in the future. If the partnership is unsuccessful, our ability to continue with our business plans could be adversely affected. In addition, negative developments in one aspect of our relationship with DSM could negatively affect other aspects of our relationship with DSM. In such event, our financial condition and business operations could be adversely affected.

In addition, DSM, due to the presence of its representatives on our board of directors, equity ownership in our company, and commercial relationships with us, may be able to control or significantly influence our management, operations and affairs, as well as matters requiring stockholder approval, including the election of directors and the approval of significant corporate transactions, such as the disposition of our intellectual property, mergers, consolidations or the sale of all or substantially all of our assets. Due to its various relationships with the Company, DSM may have interests different than, and may not act in the best interests of, our other stockholders. Consequently, our relationship with DSM may have the effect of delaying or preventing a change of control, or a change in our management or board of directors, or discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of our company, even if such actions would benefit our other stockholders.

***A significant portion of our operations are centered in Brazil, and our business will be adversely affected if we do not operate effectively in that country.***

For the foreseeable future, we will be subject to risks associated with the concentration of essential product sourcing and operations in Brazil. The Brazilian government has changed in the past, and may change in the future, monetary, taxation, credit, tariff, labor, export and other policies to influence the course of Brazil's economy. For example, the government's actions to control inflation have involved interest rate adjustments. We have no control over, and cannot predict what policies or actions the Brazilian government may take in the future. Our business, financial performance and prospects may be adversely affected by, among others, the following factors:

- delays or failures in securing licenses, permits or other governmental approvals necessary to build and operate facilities, use our yeast strains to produce products and export such products for sale outside Brazil;
- rapid consolidation in the sugar and ethanol industries in Brazil, which could result in a decrease in competition;
- political, economic, diplomatic or social instability in, or in the region surrounding, Brazil;
- changing interest rates;
- tax burden and policies;
- effects of changes in currency exchange rates;
- any changes in currency exchange policy that lead to the imposition of exchange controls or restrictions on remittances abroad;
- export or import restrictions that limit our ability to move our products out of Brazil or interfere with the import of essential materials into Brazil;
- changes in, or interpretations of foreign regulations that may adversely affect our ability to sell our products or repatriate profits to the United States;
- tariffs, trade protection measures and other regulatory requirements;
- compliance with United States and foreign laws that regulate the conduct of business abroad;
- compliance with privacy, anti-corruption and anti-bribery laws, including certain anti-corruption and privacy laws recently enacted in Brazil;
- an inability, or reduced ability, to protect our intellectual property in Brazil including any effect of compulsory licensing imposed by government action; and
- difficulties and costs of staffing and managing foreign operations.

We cannot predict whether the current or future Brazilian government will implement changes to existing policies on taxation, exchange controls, monetary strategy, labor relations, social security and the like, nor can we estimate the impact of any such changes on the Brazilian economy or our operations.

Brazil’s economy has recently experienced quarters of slow gross domestic product growth. Although recent data has shown signs of an economic recovery in Brazil, there is no assurance that such recovery will continue. In addition, major corruption scandals involving members of the executive, state-controlled enterprises and large private sector companies have been disclosed and are the subject of ongoing investigation by federal authorities. Although these investigations continued to evolve through 2019, their final outcome and impact on the Brazilian economy is not yet known and cannot be predicted with certainty.

***We are subject to the risks of doing business globally.***

We maintain operations in foreign jurisdictions other than Brazil, and may in the future expand, or seek to expand, our operations to additional foreign jurisdictions. For example, in 2018 we announced plans to increase our commercial activities in China. Operating in China exposes us to political, legal and economic risks. In particular, the political, legal and economic climate in China, both nationally and regionally, is fluid and unpredictable. Our ability to operate in China may be adversely affected by changes in U.S. and Chinese laws and regulations such as those related to taxation, import and export tariffs, environmental regulations, genetically modified microorganisms (GMM), land use rights, product testing requirements, intellectual property, currency controls, network security and other matters. In addition, we may not obtain or retain the requisite permits to operate in China, and costs or operational limitations may be imposed in connection with obtaining and complying with such permits. In addition, Chinese trade regulations are in a state of flux, and we may become subject to other forms of taxation, tariffs and duties in China. Furthermore, our counterparties in China may use or disclose our confidential information or intellectual property to competitors or third parties, which could result in the illegal distribution and sale of counterfeit versions of our products. If any of these events occur, our business, financial condition and results of operations could be materially and adversely affected.

In addition, a significant percentage of the production, downstream processing and sales of our products occurs outside the United States or with vendors, suppliers or customers located outside the United States. If tariffs or other restrictions are placed by the United States on foreign imports from Brazil, European or other countries where we operate or seek to operate, or any related counter-measures are taken, our business, financial condition and results of operations may be harmed. In 2018, President Trump imposed tariffs on steel and aluminum imports and additional tariffs on goods imported from certain specified countries and regions, including China and Europe, and has indicated potential future tariffs on a range of goods from certain countries and regions. In response, certain countries, including China, have imposed retaliatory tariffs on U.S. goods imported into such countries. If further tariffs are imposed on a broader range of imports, or if further retaliatory trade measures are taken by other countries in response to additional tariffs, our operating performance could be harmed. Tariffs may increase our cost of goods, which could result in lower gross margin on certain of our products. If we raise prices to account for any such increase in costs of goods, the competitiveness of the affected products could potentially be reduced. In either case, increased tariffs on imports from Brazil, European or other countries where we operate or seek to operate could materially and adversely affect our business, financial condition and results of operations. Furthermore, in retaliation for any tariffs imposed by the United States, other countries may implement tariffs on a wide range of American products, which could increase the cost of our products for non-U.S. customers located in such countries. Any increase in the cost of our products for non-U.S. customers, which represent a substantial portion of our sales, could result in a decrease in demand for our products by such customers. Trade restrictions implemented by the United States or other countries could materially and adversely affect our business, financial condition and results of operations.

Many, if not all of the above-mentioned risks also apply to our operations in other foreign jurisdictions where we operate or seek to operate. If any of these risks were to occur, our operations and business would be adversely affected.

***We are subject to new U.S. foreign investment regulations which may impose additional burdens on or may limit certain investors' ability to purchase our common stock, potentially making our common stock less attractive to investors.***

In October 2018, the U.S. Department of Treasury announced a pilot program to implement part of the Foreign Investment Risk Review Modernization Act (FIRRMA), effective November 10, 2018. The pilot program expands the jurisdiction of the Committee on Foreign Investment in the United States (CFIUS), to include certain direct or indirect foreign investments in a defined category of U.S. companies, including companies involved in critical infrastructure and critical technologies. Among other things, FIRRMA empowers CFIUS to require certain mandatory filings in connection with certain foreign investments in U.S. companies and permits CFIUS to charge filing fees related to such filings. Such filings are subject to review by CFIUS, which will have the authority to recommend that the President block or impose conditions on certain foreign investments in companies subject to CFIUS’s oversight. Any such restrictions on the ability of foreign investors to invest in our company could limit our ability to engage in strategic transactions that may benefit our stockholders, including a change of control, and may prevent our stockholders from receiving a premium for their shares of our common stock in connection with a change of control, and could also affect the price that some investors are willing to pay for our common stock.

***Ethical, legal and social concerns about products using genetically modified microorganisms could limit or prevent the use of our products and technologies and could harm our business.***

Our technologies and products involve the use of genetically modified microorganisms (GMMs). Public perception about the safety of, and ethical, legal or social concerns over, genetically engineered products, including GMMs, could affect public acceptance of our products. If we are not able to overcome any such concerns relating to our products, our technologies may not be accepted by our customers or end-users. In addition, the use of GMMs has in the past received negative publicity, which

could lead to greater regulation or restrictions on imports of our products. If our technologies and products are not accepted by our customers or their end-users due to negative publicity or lack of public acceptance, our business could be significantly harmed.

***Our use of genetically modified feedstocks and yeast strains to produce our products subjects us to risks of regulatory limitations and rejection of our products.***

The use of GMMs, such as our yeast strains, is subject to laws and regulations in many countries, some of which are new and some of which are still evolving. In the United States, the Environmental Protection Agency (EPA), regulates the commercial use of GMMs as well as potential products produced from GMMs. Various states or local governments within the United States could choose to regulate products made with GMMs as well. While the strain of genetically modified yeast that we currently use for the development and commercial production of our target molecules, *S. cerevisiae*, is eligible for exemption from EPA review because it is generally recognized as safe, we must satisfy certain criteria to achieve this exemption, including but not limited to use of compliant containment structures, waste disposal and safety procedures, and we cannot be sure that we will meet such criteria in a timely manner, or at all. If exemption of *S. cerevisiae* is not obtained, our business may be substantially harmed. In addition to *S. cerevisiae*, we may seek to use different GMMs in the future that will require EPA approval. If approval of different GMMs is not secured, our ability to grow our business could be adversely affected.

In Brazil, GMMs are regulated by the National Biosafety Technical Commission (CTNBio). We have obtained approvals from CTNBio to use GMMs in a contained environment in our Brazil facilities for research and development purposes as well as at contract manufacturing facilities in Brazil for industrial-scale production of target products. In addition, we have obtained initial commercial approvals from CTNBio for five of our yeast strains, with two of these strains being approved for feed purposes. As we continue to develop new yeast strains and deploy our technology at new production facilities in Brazil, we will be required to obtain further approvals from CTNBio in order to use these strains in industrial-scale commercial production in Brazil. We may not be able to obtain such approvals on a timely basis, or at all, and if we do not, our ability to produce our products in Brazil could be impaired, which would adversely affect our results of operations and financial condition.

In addition to our production operations in the United States and Brazil, we have been party to contract manufacturing agreements with parties in other production locations around the world, including Europe. The use of GMM technology is regulated in the European Union, which has established various directives for member states regarding regulation of the use of such technology, including notification processes for contained use of such technology. We expect to encounter GMM regulations in most, if not all, of the countries in which we may seek to establish production capabilities and/or conduct sales to customers or end-use consumers, and the scope and nature of these regulations will likely be different from country to country. If we cannot meet the applicable regulatory requirements in the countries in which we produce or sell, or intend to produce or sell, products using our yeast strains, or if it takes longer than anticipated to obtain the necessary regulatory approvals, our business could be adversely affected. Furthermore, there are various governmental, non-governmental and quasi-governmental organizations that review and certify products with respect to the determination of whether products can be classified as "natural" or other similar classifications. While the certification from such governmental organizations, and verification from non-governmental and quasi-governmental organizations are generally not mandatory, some of our current or prospective customers, collaboration partners or distributors may require that we meet the standards set by such organizations as a condition precedent to purchasing or distributing our products. We cannot be certain that we will be able to satisfy the standards of such organizations, and any delay or failure to do so could harm our ability to sell or distribute some or all of our products to certain customers and prospective customers, which could have a negative impact on our business.

***We may not be able to obtain regulatory approval for the sale of our renewable products.***

Our renewable chemical products may be subject to government regulation in our target markets. In the United States, the EPA administers the Toxic Substances Control Act (the TSCA), which regulates the commercial registration, distribution, and use of many chemicals. Before an entity can manufacture or distribute a new chemical subject to the TSCA, it must file a Pre-Manufacture Notice, or PMN, to add the chemical to a product. The EPA has 180 days to review the filing but may request additional data, which could significantly extend the timeline for approval. As a result, we may not receive EPA approval to list future molecules on the TSCA registry as expeditiously as we would like, resulting in delays or significant increases in testing requirements. A similar program exists in the European Union, called REACH. Under this program, chemicals imported or manufactured in the European Union in certain quantities must be registered with the European Chemicals Agency, and this process could cause delays or entail significant costs. To the extent that other countries in which we are producing or selling (or seeking to produce or sell) our products, such as Brazil and various countries in Asia, rely on TSCA or REACH (or similar laws and programs) for chemical registration or regulation in their jurisdictions, delays with the United States or European authorities, or any relevant authorities in such other countries, may delay entry into these markets as well. In addition, some of

our Biofene-derived products are sold for the cosmetics market, and some countries may impose additional regulatory requirements or permits for such uses, which could impair, delay or prevent sales of our products in those markets. Also, certain of our current or proposed products in the Flavor & Fragrance, Clean Beauty and Health & Wellness markets, including alternative sweeteners, nutraceuticals, Flavor & Fragrance ingredients, skincare ingredients and cosmetic actives, may be subject to the approval of and regulation by the FDA, the European Food Safety Authority, as well as similar agencies of states and foreign jurisdictions where these products are sold or proposed to be sold.

We expect to encounter regulations in most, if not all, of the countries in which we may seek to produce, import or sell our products (and our customers may encounter similar regulations in selling end-use products to consumers), and we cannot assure you that we (or our customers) will be able to obtain necessary approvals and third-party verifications in a timely manner or at all. If our products do not meet applicable regulatory requirements in a particular country, then we (or our customers) may not be able to commercialize our products in such country and our business will be adversely affected. In addition, any enforcement action taken by regulators against us or our products could cause us to suffer adverse publicity, which could harm our reputation and our relationship with our customers and vendors.

In addition, many of our products are intended to be a component of our collaboration partners and/or customers' (or their customers') end-use products. Such end-use products may be subject to various regulations, including regulations promulgated by the EPA, the FDA, or the European Food Safety Authority. If our company or our collaboration partners and customers (or their customers) are not successful in obtaining any required regulatory approval or third-party verifications for their end-use products that incorporate our products, or fail to comply with any applicable regulations for such end-use products, whether due to our products or otherwise, demand for our products may decline and our revenues will be adversely affected.

***Changes in government regulations, including subsidies and economic incentives, could have a material adverse effect on our business.***

The markets where we sell our products are heavily influenced by foreign, federal, state and local government regulations and policies. Changes to existing or adoption of new foreign or domestic federal, state and local legislative initiatives that impact the production, distribution or sale of products may harm our business. The uncertainty regarding future standards and policies, including developing legislation in the Clean Beauty industry, may also affect our ability to develop our products or to license our technologies to third parties and to sell products to our end customers. Any inability to address these requirements and any regulatory or policy changes could have a material adverse effect on our business, financial condition and results of operations.

Furthermore, the production of our products will depend on the availability of feedstock, especially sugarcane. Agricultural production and trade flows are subject to government policies and regulations. Governmental policies affecting the agricultural industry, such as taxes, tariffs, duties, subsidies, incentives and import and export restrictions on agricultural commodities and commodity products can influence the planting of certain crops, the location and size of crop production, whether unprocessed or processed commodity products are traded, the volume and types of imports and exports, and the availability and competitiveness of feedstocks as raw materials. Future government policies may adversely affect the supply of feedstocks, restrict our ability to use sugarcane or other feedstocks to produce our products, or encourage the use of feedstocks more advantageous to our competitors, which would put us at a commercial disadvantage and could negatively impact our future revenues and results of operations.

***Our cannabinoid initiative is uncertain and may not yield commercial results and is subject to significant regulatory risks.***

In 2019, we announced a new collaboration arrangement aimed at developing, producing and commercializing fermentation-derived cannabinoids. While we believe there are substantial business opportunities for us in this field, there can be no assurance that our activities will be successful, or that any research and development and product testing efforts will result in commercially saleable products, or that the market will accept or respond positively to our products.

In addition, the market for cannabinoids is heavily regulated. Synthetic cannabinoids may be viewed as qualifying as controlled substances under the federal Controlled Substances Act of 1970 (CSA), and may be subject to a high degree of regulation including, among other things, certain registration, licensing, manufacturing, security, record keeping, reporting, import, export, clinical and non-clinical studies, insurance and other requirements administered by the U.S. Drug Enforcement Administration (DEA) and/or the FDA.

Individual states and countries have also established controlled substance laws and regulations, which may differ from U.S. federal law. We or our partner may be required to obtain separate state or country registrations, permits or licenses in order to be able to develop produce, sell, store and transport cannabinoids.

Complying with laws and regulations relating to cannabinoids is evolving, complex and expensive, and may divert management's attention and resources from other aspects of our business. Failure to maintain compliance with such laws and regulations may result in regulatory action that could have a material adverse effect on our business, results of operations and financial condition. The DEA, FDA or state agencies may seek civil penalties, refuse to renew necessary registrations, or initiate proceedings to revoke those registrations. In certain circumstances, violations could lead to criminal proceedings.

***We may incur significant costs to comply with environmental laws and regulations, and failure to comply with these laws and regulations could expose us to significant liabilities.***

We use intermediate substances, hazardous chemicals and radioactive and biological materials in our business, and such materials are subject to a variety of federal, state and local laws and regulations governing the use, generation, manufacture, storage, handling and disposal of these materials in the United States, European Union and Brazil. Although we have implemented safety procedures for handling and disposing of these materials and related waste products in an effort to comply with these laws and regulations, we cannot be sure that our safety measures and those of our contractors will prevent accidental injury or contamination from the use, storage, handling or disposal of hazardous materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our insurance coverage. There can be no assurance that violations of environmental, health and safety laws will not occur in the future as a result of human error, accident, equipment failure or other causes. Compliance with applicable environmental laws and regulations may be expensive, and the failure to comply with past, present, or future laws could result in the imposition of fines, third party property damage, product liability and personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations, and our liability may exceed our total assets. Liability under environmental laws can be joint and several, without regard to comparative fault, and may be punitive in nature. Furthermore, environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could impair our research, development or production efforts and otherwise harm our business.

***Our proprietary rights may not adequately protect our technologies and product candidates.***

Our commercial success will depend substantially on our ability to obtain patents and maintain adequate legal protection for our technologies and product candidates in the United States and other countries. As of December 31, 2019, we had 633 issued United States and foreign patents and 238 pending United States and foreign patent applications that were owned or co-owned by or licensed to us. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies and future products are covered by valid and enforceable patents or are effectively maintained as trade secrets.

We apply for patents covering both our technologies and product candidates, as we deem appropriate. However, filing, prosecuting, maintaining and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States are less extensive than those in the United States. We may also fail to apply for patents on important technologies or product candidates in a timely fashion, or at all. Our existing and future patents may not be sufficiently broad to prevent others from practicing our technologies or from designing products around our patents or otherwise developing competing products or technologies. In addition, the patent positions of companies like ours are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. No consistent policy regarding the breadth of patent claims has emerged to date in the United States and the landscape is expected to become even more uncertain in view of recent rule changes by the United States Patent Office, or USPTO. Additional uncertainty may result from legal decisions by the United States Federal Circuit and Supreme Court as they determine legal issues concerning the scope and construction of patent claims and inconsistent interpretation of patent laws or from legislation enacted by the U.S. Congress. The patent situation outside of the United States is also difficult to predict. As a result, the validity and enforceability of patents cannot be predicted with certainty. Moreover, we cannot be certain whether:

- we (or our licensors) were the first to make the inventions covered by each of our issued patents and pending patent applications;
- we (or our licensors) were the first to file patent applications for these inventions;
- others will independently develop similar or alternative technologies or duplicate any of our technologies;
- any of our or our licensors' patents will be valid or enforceable;
- any patents issued to us (or our licensors) will provide us with any competitive advantages, or will be challenged by third parties;
- we will be able to identify when others are infringing our (or our licensed) valid patent claims;
- we will develop additional proprietary products or technologies that are patentable; or
- the patents of others will have an adverse effect on our business.

We do not know whether any of our pending patent applications or those pending patent applications that we license will result in the issuance of any patents. Even if patents are issued, they may not be sufficient to protect our technology or product candidates. The patents we own or license and those that may be issued in the future may be challenged, invalidated, rendered unenforceable, or circumvented, and the rights granted under any issued patents may not provide us with proprietary protection or competitive advantages. Moreover, third parties could practice our inventions in territories where we do not have patent protection or in territories where they could obtain a compulsory license to our technology where patented. Such third parties may then try to import products made using our inventions into the United States or other territories. Accordingly, we cannot ensure that any of our pending patent applications will result in issued patents, or even if issued, predict the breadth, validity and enforceability of the claims upheld in our and other companies' patents.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries do not favor the enforcement of patents or other intellectual property rights, which could hinder us from preventing the infringement of our patents or other intellectual property rights. Proceedings to enforce our patent rights in the United States or foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert patent infringement or other claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license from third parties.

Moreover, we have granted certain of our lenders liens on substantially all of our assets, including our intellectual property, as collateral. If we default on our payment obligations under these secured loans, such lenders have the right to foreclose upon and control the disposition of our assets, including our intellectual property assets, to satisfy our payment obligations under such instruments. If such default occurs, and our intellectual property assets are sold or licensed, our business could be materially adversely affected.

Unauthorized parties may attempt to copy or otherwise obtain and use our products or technology. Monitoring unauthorized use of our intellectual property is difficult, and we cannot be certain that the steps we have taken will prevent unauthorized use of our technology, particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the United States or may provide, today or in the future, for compulsory licenses. Moreover, in some cases our ability to determine if our intellectual property is being unlawfully used by a competitor may be limited. If competitors are able to use our technology, our ability to compete effectively could be harmed. Moreover, others may independently develop and obtain patents for technologies that are similar to, or superior to, our technologies. If that happens, we may need to license these technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could cause harm to our business.

***We rely in part on trade secrets to protect our technology, and our failure to obtain or maintain trade secret protection could adversely affect our competitive business position.***

We rely on trade secrets to protect some of our technology, particularly where we do not believe patent protection is appropriate or obtainable. However, trade secrets are difficult to maintain and protect. Our strategy for contract manufacturing and scale-up of commercial production requires us to share confidential information with our international business partners and other parties. Our product development collaborations with third parties, including with Givaudan, Firmenich, DSM and Yifan, require us to share certain confidential information. While we use reasonable efforts to protect our trade secrets, our or our business partners' employees, consultants, contractors or scientific and other advisors may unintentionally or willfully disclose our proprietary information to competitors. Enforcement of claims that a third party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, foreign courts are sometimes less willing than United States courts to protect trade secrets. If our competitors lawfully obtain or independently develop equivalent knowledge, methods and know-how, we would not be able to assert our trade secrets against them.

We require new employees and consultants to execute proprietary information and inventions agreements upon the commencement of an employment or consulting arrangement with us. We additionally require contractors, advisors, corporate collaboration partners, outside scientific collaboration partners and other third parties that may receive trade secret information to execute such agreements or confidentiality agreements. These agreements generally require that all confidential information developed by the individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not be disclosed to third parties. These agreements also generally provide that inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, our proprietary information

may be disclosed, or these agreements may be unenforceable or difficult to enforce. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such third party, or those to whom they communicate such technology or information, from using that technology or information to compete with us. Additionally, trade secret law in Brazil differs from that in the United States, which requires us to take a different approach to protecting our trade secrets in Brazil. Some of these approaches to trade secret protection may be novel and untested under Brazilian law and we cannot guarantee that we would prevail if our trade secrets are contested in Brazil. If any of the above risks materializes, our failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

***Third parties and former employees may misappropriate our trade secrets including those embodied in our yeast strains.***

Third parties, including collaboration partners, contract manufacturers, other contractors and shipping agents, as well as exiting employees, often have access to our trade secrets and custody or control of our yeast strains. If our trade secrets or yeast strains were stolen, misappropriated or reverse engineered, they could be used by other parties who may be able to reproduce the yeast strains for their own commercial gain. If this were to occur, it would be difficult for us to challenge and prevent this type of use, especially in countries where we have limited intellectual property protection or that do not have robust intellectual property law regimes.

***If we or one of our collaboration partners is sued for infringing intellectual property rights or other proprietary rights of third parties, litigation could be costly and time consuming and could prevent us from developing or commercializing our future products.***

Our commercial success depends on our and our collaboration partners' ability to operate without infringing the patents and proprietary rights of other parties and without breaching any agreements we have entered into with regard to our technologies and product candidates. We cannot determine with certainty whether patents or patent applications of other parties may materially affect our ability to conduct our business. Our industry spans several sectors, including biotechnology, renewable fuels, renewable specialty chemicals and other renewable molecules, and is characterized by the existence of a significant number of patents and disputes regarding patent and other intellectual property rights. Because patent applications remain unpublished and confidential for eighteen months and can take several years to issue, there may currently be pending applications, unknown to us, that may result in issued patents that cover our technologies or product candidates. There may be a significant number of patents and patent applications relating to aspects of our technologies filed by, and issued to, third parties. The existence of third-party patent applications and patents could significantly reduce the coverage of patents owned by or licensed to us and our collaboration partners and limit our ability to obtain meaningful patent protection. If we wish to make, use, sell, offer to sell, or import the technology or compound claimed in issued and unexpired patents owned by others, we may need to obtain a license from the owner, develop or obtain alternative technologies, enter into litigation to challenge the validity of the patents or incur the risk of litigation in the event that the owner asserts that we infringe its patents. If patents containing competitive or conflicting claims are issued to third parties and these claims are ultimately determined to be valid, we and our collaboration partners may be enjoined from pursing research, development, or commercialization of products, or be required to obtain licenses to these patents, or to develop or obtain alternative technologies.

If a third party asserts that we infringe upon its patents or other proprietary rights, we could face a number of issues that could seriously harm our competitive position, including:

- infringement and other intellectual property claims, which could be costly and time consuming to litigate, whether or not the claims have merit, and which could prevent or delay getting our products to market and divert management attention from our business;
- substantial damages for past infringement, which we may have to pay if a court determines that our products or technologies infringe a third party's patent or other proprietary rights;
- a court prohibiting us from selling or licensing our technologies or future products unless the holder licenses the patent or other proprietary rights to us, which it is not required to do;
- the International Trade Commission (ITC) prohibiting us from importing our products into the United States; and
- if a license is available from a third party, such third party may require us to pay substantial royalties or grant cross licenses to our patents or proprietary rights.

The industries in which we operate, and the biotechnology industry in particular, are characterized by frequent and extensive litigation and patent agency procedures regarding patents and other intellectual property rights. Many biotechnology companies have employed intellectual property litigation as a way to gain a competitive advantage. If any of our competitors have filed patent applications or obtained patents that claim inventions also claimed by us, we may have to participate in interference proceedings declared by the relevant patent regulatory agency to determine priority of invention and, thus, the right to the patents for these inventions in the United States. In addition, third parties may be able to challenge the validity of one or

more of our patents using available post-grant procedures including oppositions and *inter partes* reviews (IPR). These proceedings could result in substantial cost to us even if the outcome is favorable. Even if successful, an interference or post-grant proceeding may result in loss of certain of our patent claims. Our involvement in litigation, interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States, to defend our intellectual property rights, or as a result of alleged infringement of the rights of others, may divert management time from focusing on business operations and could cause us to spend significant resources, all of which could harm our business and results of operations.

Many of our employees were previously employed at universities, biotechnology, specialty chemical or oil companies, including our competitors or potential competitors. We may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel and be enjoined from certain activities. A loss of key research personnel or their work product, especially to our competitors or potential competitors, could hamper or prevent our ability to commercialize our product candidates, which could severely harm our business. Even if we are successful in prosecuting or defending against these claims, litigation could result in substantial costs and demand on management resources.

***We may need to commence litigation to enforce our intellectual property rights, which would divert resources and management's time and attention and the results of which would be uncertain.***

Enforcement of claims that a third party is using our proprietary rights without permission is expensive, time consuming and uncertain. Significant litigation would result in substantial costs, even if the eventual outcome is favorable to us and would divert management's attention from our business objectives. In addition, an adverse outcome in litigation could result in a substantial loss of our proprietary rights and we may lose our ability to exclude others from practicing our technology or producing our product candidates.

The laws of some foreign countries do not protect intellectual property rights to the same extent as do the laws of the United States. Many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents by foreign holders and other intellectual property protection, particularly those relating to biotechnology and/or bioindustrial technologies. This could make it difficult for us to stop the infringement of our patents or misappropriation of our other intellectual property rights. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Moreover, our efforts to protect our intellectual property rights in such countries may be inadequate.

***We do not have exclusive rights to intellectual property we develop under U.S. federally funded research grants and contracts, including with DARPA and DOE, and we could ultimately share or lose the rights we do have under certain circumstances.***

Some of our intellectual property rights have been or may be developed in the course of research funded by the U.S. government, including under our agreements with DARPA and DOE. As a result, the U.S. government may have certain rights to intellectual property embodied in our current or future products pursuant to the Bayh-Dole Act of 1980. Government rights in certain inventions developed under a government-funded program include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right to require us, or an assignee or exclusive licensee to such inventions, to grant licenses to any of these inventions to a third party if they determine that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; (iii) government action is necessary to meet requirements for public use under federal regulations; or (iv) the right to use or sell such inventions is exclusively licensed to an entity within the U.S. and substantially manufactured outside the U.S. without the U.S. government's prior approval. Additionally, we may be restricted from granting exclusive licenses for the right to use or sell our inventions created pursuant to such agreements unless the licensee agrees to additional restrictions (e.g., manufacturing substantially all of the invention in the U.S.). The U.S. government also has the right to take title to these inventions if we fail to disclose the invention to the government and fail to file an application to register the intellectual property within specified time limits. In addition, the U.S. government may acquire title in any country in which a patent application is not filed within specified time limits. Additionally, certain inventions are subject to transfer restrictions during the term of these agreements and for a period thereafter, including sales of products or components, transfers to foreign subsidiaries for the purpose of the relevant agreements, and transfers to certain foreign third parties. If any of our intellectual property becomes subject to any of the rights or remedies available to the U.S. government or third parties pursuant to the Bayh-Dole Act of 1980, this could impair the value of our intellectual property and could adversely affect our business.

***Loss of, or inability to secure government contract revenues could impair our business.***

We have contracts or subcontracts with certain governmental agencies or their contractors, including DARPA. Generally, these agreements, as they may be amended or modified from time to time, have fixed terms and may be terminated, modified or be subject to recovery of payments by the government agency under certain conditions (such as failure to comply with detailed reporting and governance processes or failure to achieve milestones). Under these agreements, we are also subject to audits, which can result in corrective action plans and penalties up to and including termination. If these governmental agencies terminate these agreements with us, it could reduce our revenues which could harm our business. Additionally, we anticipate securing additional government contracts as part of our business plan for 2020 and beyond. If we are unable to secure such government contracts, it could harm our business.

***Our products subject us to product-safety risks, and we may be sued for product liability.***

The design, development, production and sale of our products involve an inherent risk of product liability claims and the associated adverse publicity. Our products could be used by a wide variety of consumers with varying levels of sophistication. Although safety is a priority for us, we are not always in control of the final uses and formulations of the products we supply or their use as ingredients. Our products could have detrimental impacts or adverse impacts we cannot anticipate. Despite our efforts, negative publicity about Amyris, including product safety or similar concerns, whether real or perceived, could occur, and our products could face withdrawal, recall or other quality issues. In addition, we may be named directly in product liability suits relating to our products, even for defects resulting from errors of our commercial partners, contract manufacturers, chemical finishers, customers or end users of our products. These claims could be brought by various parties, including customers who are purchasing products directly from us or other users who purchase products from our customers. We could also be named as co-parties in product liability suits that are brought against the contract manufacturers with whom we partner to produce our products. Insurance coverage is expensive, may be difficult to obtain and may not be available in the future on acceptable terms. We cannot be certain that our contract manufacturers or the sugar and ethanol producers who partner with us to produce our products will have adequate insurance coverage to cover against potential claims. Any insurance we do maintain may not provide adequate coverage against potential losses, and if claims or losses exceed our liability insurance coverage, our business would be adversely impacted. In addition, insurance coverage may become more expensive, which would harm our results of operations.

***We may become subject to lawsuits or indemnity claims in the ordinary course of business, which could materially and adversely affect our business and results of operations.***

From time to time, we may in the ordinary course of business be named as a defendant in lawsuits, indemnity claims and other legal proceedings. These actions may seek, among other things, compensation for alleged personal injury, employment discrimination, breach of contract, property damage and other losses or injunctive or declaratory relief. In the event that such actions, claims or proceedings are ultimately resolved unfavorably to us at amounts exceeding our accrued liability, or at material amounts, the outcome could materially and adversely affect our reputation, business and results of operations. In addition, payments of significant amounts, even if reserved, could adversely affect our liquidity position. For more information regarding our current legal proceedings, please refer to the section entitled “Legal Proceedings” in Part I, Item 3 of this Annual Report on Form 10-K.

***We may not be able to fully enforce covenants not to compete with and not to solicit our employees, and therefore we may be unable to prevent our competitors from benefiting from the expertise of such employees.***

Our proprietary information and inventions agreements with our employees contain non-compete and non-solicitation provisions. These provisions prohibit our employees from competing directly with our business or proposed business or working for our competitors during their term of employment, and from directly or indirectly soliciting our employees or consultants to leave our company for any purpose. Under applicable U.S. and Brazilian law, we may be unable to enforce these provisions. If we cannot enforce these provisions with our employees, we may be unable to prevent our competitors from benefiting from the expertise of such employees. Even if these provisions are enforceable, they may not adequately protect our interests. The defection of one or more of our employees to a competitor could materially adversely affect our business, results of operations and ability to capitalize on our proprietary information.

***Loss of key personnel, including key management personnel, and/or failure to attract and retain additional personnel could delay our product development programs and harm our research and development efforts and our ability to meet our business objectives.***

Our business involves complex, global operations across a variety of markets and requires a management team and employee workforce that is knowledgeable in the many areas in which we operate. As we continue to build our business, we will need to hire and retain qualified research and development, management and other personnel to succeed. The process of hiring, training and successfully integrating qualified personnel into our operations in the United States, Brazil and other countries in which we may seek to operate, can be a lengthy and expensive one. The market for qualified personnel is very competitive because of the limited number of people available who have the necessary technical skills and understanding of our technology and products. Our failure to hire and retain qualified personnel could impair our ability to meet our research and development and business objectives and adversely affect our results of operations and financial condition.

The loss of any key member of our management or key technical and operational employees, or the failure to attract or retain such employees, could prevent us from developing and commercializing our products for our target markets and executing our business strategy. In addition, we may not be able to attract or retain qualified employees in the future due to the intense competition for qualified personnel among biotechnology and other technology-based businesses. Furthermore, any reductions to our workforce as part of potential cost-saving measures, such as those discussed above with respect to our planned actions to continue as a going concern, may make it more difficult for us to attract and retain key employees. If we do not maintain the necessary personnel to accomplish our business objectives, we may experience staffing constraints that will adversely affect our ability to meet the demands of our collaboration partners and customers in a timely fashion or to support our internal research and development programs and operations. In particular, our product and process development programs depend on our ability to attract and retain highly skilled technical and operational personnel. Competition for such personnel from numerous companies and academic and other research institutions may limit our ability to do so on acceptable terms. All of our U.S. employees are “at-will” employees, which means that either the employee or we may terminate their employment at any time.

***Our operations rely on sophisticated information technology and equipment systems, a disruption of which could harm our operations.***

We rely on various information technology and equipment systems, some of which are dependent on services provided by third parties, to manage our technology platform and operations. These systems provide critical data and services for internal and external users, including research and development activities, procurement and inventory management, transaction processing, financial, commercial and operational data, partner and joint venture activities, human resources management, legal and tax compliance and other processes necessary to operate and manage our business. These systems are complex and are frequently updated as technology improves, and include software and hardware that is licensed, leased or purchased from third parties. If our information technology and equipment systems experience breaches or other failures or disruptions, our systems and the information contained therein could be compromised. While we have implemented security measures and disaster recovery plans designed to mitigate the effects of any failures or disruption of these systems, such measures may not adequately prevent adverse events such as breaches or failures from occurring or mitigate their severity if they do occur. If our information technology or equipment systems are breached, damaged or fail to function properly due to internal errors or defects, implementation or integration issues, catastrophic events or power outages, we may experience a material disruption in our ability to manage our business operations. Failure or disruption of these systems could have an adverse effect on our operating results and financial condition.

***Increased information systems security threats and more sophisticated, targeted computer invasions could pose a risk to our technology platform and operations.***

Increased information systems security threats, cyber- or phishing-attacks and more sophisticated, targeted computer invasions pose a risk to the security of our systems and networks, and the confidentiality, availability, and integrity of our data, operations, and communications. Cyber-attacks against our technology platform and infrastructure could result in exposure of confidential information, the modification of critical data, and/or the failure of critical operations. Likewise, improper or inadvertent employee behavior, including data privacy breaches by employees and others with permitted access to our systems may pose a risk that sensitive data may be exposed to unauthorized persons or to the public. While we attempt to mitigate these risks by employing a number of measures, including security measures, employee training, comprehensive monitoring of our networks and systems, maintenance of backup and protective systems and incident response procedures, if these measures prove inadequate, we could be adversely affected by, among other things, loss or damage of intellectual property, proprietary and confidential information, data integrity, and communications or customer data, increased costs to prevent, respond to, or mitigate these cyber security threats and interruptions of our business operations.

***Growth may place significant demands on our management and our infrastructure.***

We have experienced, and expect to continue to experience, expansion of our business as we continue to make efforts to develop and bring our products to market. We have grown from 18 employees at the end of 2005 to 561 full-time employees at December 31, 2019. Our growth and diversified operations have placed, and may continue to place, significant demands on our management and our operational and financial infrastructure. In particular, continued growth could strain our ability to:

- manage multiple research and development programs;
- operate multiple manufacturing facilities around the world;
- develop and improve our operational, financial and management controls;
- enhance our reporting systems and procedures;
- recruit, train and retain highly skilled personnel;
- develop and maintain our relationships with existing and potential business partners;
- maintain our quality standards; and
- maintain customer satisfaction.

Managing our growth will require significant expenditures and allocation of valuable management resources. If we fail to achieve the necessary level of efficiency in our organization as it grows, our business, results of operations and financial condition would be adversely impacted.

***Our international operations expose us to the risk of fluctuation in currency exchange rates and rates of foreign inflation, which could adversely affect our results of operations.***

We currently incur significant costs and expenses in Brazilian real and may in the future incur additional expenses in foreign currencies and derive a portion of our revenues in the local currencies of customers throughout the world. As a result, our revenues and results of operations are subject to foreign exchange fluctuations, which we may not be able to manage successfully. During the past few decades, the Brazilian currency in particular has faced frequent and substantial exchange rate fluctuations in relation to foreign currencies mostly because of political and economic conditions. There can be no assurance that the Brazilian real will not significantly appreciate or depreciate against the United States dollar in the future. We also bear the risk that the rate of inflation in the foreign countries where we incur costs and expenses or the decline in value of the United States dollar compared to those foreign currencies will increase our costs as expressed in United States dollars. For example, future measures by the Central Bank of Brazil to control inflation, including interest rate adjustments, intervention in the foreign exchange market and actions to fix the value of the real, may weaken the United States dollar in Brazil. Whether in Brazil or elsewhere, we may not be able to adjust the prices of our products to offset the effects of inflation or foreign currency appreciation on our cost structure, which could increase our costs and reduce our net operating margins. If we do not successfully manage these risks through hedging or other mechanisms, our revenues and results of operations could be adversely affected.

***Our U.S. GAAP operating results could fluctuate substantially due to the accounting for embedded derivatives in our convertible debt and equity instruments, and debt that we measure at fair value.***

Features in several of our outstanding convertible debt and equity instruments are accounted for under Accounting Standards Codification 815, Derivatives and Hedging (ASC 815), as embedded derivatives. ASC 815 requires companies to bifurcate conversion options from their host instruments and account for them as free standing derivative financial instruments according to certain criteria. The current fair value of the derivative is remeasured to fair value at each balance sheet date, with a resulting non-cash gain or loss related to the change in the fair value of the derivative being charged to earnings (loss) in the statement of operations. We have determined that we must bifurcate and account for certain features of our convertible debt and equity instruments as embedded derivatives in accordance with ASC 815. We have recorded these embedded derivative liabilities as non-current liabilities on our consolidated balance sheet with a corresponding discount at the date of issuance that is netted against the principal amount of the applicable instrument. The derivative liabilities are remeasured to fair value at each balance sheet date, with a resulting non-cash gain or loss related to the change in the fair value of the derivative liabilities being recorded in other income or expenses. There is no current observable market for this type of derivative and, as such, we determine the fair value of the embedded derivatives using the binomial lattice model. The valuation model uses the stock price, conversion price, maturity date, risk-free interest rate, estimated stock volatility and estimated credit spread. Changes in the inputs for these valuation models may have a significant impact on the estimated fair value of the embedded derivative liabilities. For example, an increase in our stock price would result in an increase in the estimated fair value of the embedded derivative liabilities, if in this example, each of the other elements of the valuation model remained substantially unchanged from the last measurement date. The embedded derivative liabilities may have, on a U.S. GAAP basis, a substantial effect on our balance sheet from quarter to quarter and it is difficult to predict the effect on our future U.S. GAAP financial results, since valuation of these embedded derivative liabilities are based on factors largely outside of our control and may have a negative impact on our statement of operations and balance sheet. The effects of these embedded derivatives may cause our U.S. GAAP operating results to be below expectations, which may cause our stock price to decline. See Note 3, "Fair Value Measurement"

in Part II, Item 8 of this Annual Report on Form 10-K for more information regarding the valuation of embedded derivatives in certain of our outstanding debt and equity instruments.

In addition, we account for one of our outstanding debt instruments at fair value. That instrument is remeasured to fair value at each balance sheet date, with a resulting non-cash gain or loss from change in fair value of debt recorded in other income or expense.

***Our ability to use our net operating loss carryforwards to offset future taxable income may be subject to certain limitations.***

In general, under Section 382 of the Internal Revenue Code (the Code), a corporation that undergoes an "ownership change", as defined in the Code, is subject to limitations on its ability to utilize its pre-ownership change net operating loss carryforwards (NOLs) to offset future taxable income. During the three years ended December 31, 2017 and the two years ended December 31, 2019, changes in our share ownership resulted in significant reductions in our NOLs pursuant to Section 382 of the Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Code; if that occurs, our ability to utilize NOLs could be further limited. Furthermore, our ability to utilize NOLs of companies that we may acquire in the future may be subject to limitations under Section 382 of the Code. For these reasons, we may not be able to utilize a material portion of our reported NOLs as of December 31, 2019, even if we attain profitability, which could adversely affect our results of operations.

***Our headquarters and other facilities are located in active earthquake and tsunami or in active hurricane zones, and an earthquake, hurricane or other type of natural disaster affecting us or our suppliers could cause resource shortages, disrupt our business and harm our results of operations.***

We conduct our primary research and development operations in the San Francisco Bay Area in an active earthquake and tsunami zone, and certain of our suppliers conduct their operations in the same region or in other locations that are susceptible to natural disasters. In addition, California and some of the locations where certain of our suppliers are located have experienced shortages of water, electric power and natural gas from time to time. The occurrence of a hurricane or associated flooding in the Wilmington, North Carolina area could cause damage to our facility located in Leland or result in localized extended outages of utilities or transportation systems. The occurrence of a natural disaster, such as an earthquake, hurricane, drought or flood, or localized extended outages of critical utilities or transportation systems, or any critical resource shortages, affecting us or our suppliers could cause a significant interruption in our business, damage or destroy our facilities, production equipment or inventory or those of our suppliers and cause us to incur significant costs or result in limitations on the availability of our raw materials, any of which could harm our business, financial condition and results of operations. The insurance we maintain against fires, earthquakes and other natural disasters may not be adequate to cover our losses in any particular case. Our facilities undergo annual loss control audits and both our Emeryville and Leland facilities have emergency actions plans outlining emergency response practices for these and other emergency scenarios. Training on emergency response is provided to all employees at hire and annually thereafter as a refresh.

***Our stock price may be volatile.***

The market price of our common stock has been, and we expect it to continue to be, subject to significant volatility, and it has declined significantly from our initial public offering price. Market prices for securities of early stage companies have historically been particularly volatile. Such fluctuations could be in response to, among other things, the factors described in this "Risk Factors" section, or other factors, some of which are beyond our control, such as:

- fluctuations in our financial results or outlook or those of companies perceived to be similar to us;
- changes in estimates of our financial results or recommendations by securities analysts;
- changes in market valuations of similar companies;
- changes in the prices of commodities associated with our business such as sugar and petroleum or changes in the prices of commodities that some of our products may replace, such as oil and other petroleum sourced products;
- changes in our capital structure, such as future issuances of securities or the incurrence of debt;
- announcements by us or our competitors of significant contracts, acquisitions or strategic partnerships;
- regulatory developments in the United States, Brazil, and/or other foreign countries;
- litigation involving us, our general industry or both;
- additions or departures of key personnel;
- investors' general perception of us; and
- changes in general economic, industry and market conditions.

Furthermore, stock markets have experienced price and volume fluctuations that have affected, and continue to affect, the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the

operating performance of those companies. These broad market fluctuations, as well as general economic, political and market conditions, such as recessions, interest rate changes and international currency fluctuations, may negatively affect the market price of our common stock.

In the past, many companies that have experienced volatility and sustained declines in the market price of their stock have become subject to securities class action and derivative action litigation. We were involved in two such lawsuits that were dismissed in 2014, were involved in five such lawsuits that were dismissed in September 2017, July 2018 and September 2018, respectively, are currently involved in two such lawsuits, as described in more detail below under “Legal Proceedings,” and we may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management’s attention from other business concerns, which could seriously harm our business.

***The concentration of our capital stock ownership with insiders will limit the ability of other stockholders to influence corporate matters and presents risks related to the operations of our significant stockholders.***

As of January 31, 2020, significant stockholders held an aggregate total of 56.9% of the Company's total common shares outstanding, as follows: Foris Ventures, LLC (Foris) (33.3%), DSM (8.1%), Total (6.2%), Loyola Capital (5.2%) and Vivo Capital LLC (Vivo) (4.1%). Furthermore, each of these parties holds some or a combination of convertible preferred stock, warrants and purchase rights, pursuant to which they may acquire additional shares of our common stock and thereby increase their ownership interest in our company. Additionally, Foris is indirectly owned by John Doerr, one of our current directors, and each of DSM, Total and Vivo have the right to designate one or more directors to serve on our Board of Directors pursuant to agreements between us and such stockholders. This significant concentration of share ownership may adversely affect the trading price of our common stock because investors often perceive disadvantages in owning stock in companies with stockholders with significant interests. Also, these stockholders, acting together, may be able to control or significantly influence our management and affairs and matters requiring stockholder approval, including the election of directors and the approval of significant corporate transactions, such as mergers, consolidations or the sale of all or substantially all of our assets, and may not act in the best interests of our other stockholders. Consequently, this concentration of ownership may have the effect of delaying or preventing a change of control, or a change in our management or Board of Directors, or discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of our company, even if such actions would benefit our other stockholders.

In addition, certain of our significant stockholders are also our commercial partners and have various rights in connection with their security ownership in us. These stockholders may have interests that are different from those of our other stockholders, including with respect to our company’s commercial transactions. While we have a related-party transactions policy that requires certain approvals of any transaction between our company and a significant stockholder or its affiliates, there can be no assurance that our significant stockholders will act in the best interests of our other stockholders, which could harm our results of operations and cause our stock price to decline.

***The market price of our common stock could be negatively affected by future sales of our common stock.***

If our existing stockholders, particularly our largest stockholders, our directors, their affiliates, or our executive officers, sell a substantial number of shares of our common stock in the public market, the market price of our common stock could decrease significantly. The perception in the public market that these stockholders might sell our common stock could also depress the market price of our common stock and could impair our future ability to obtain capital, especially through an offering of equity securities.

We have in place, or have agreed to file, registration statements for the resale of certain shares of our common stock held by, or issuable to, certain of our largest stockholders. All of our common stock sold pursuant to an offering covered by such registration statements will be freely transferable. In addition, shares of our common stock issued or issuable under our equity incentive plans have been registered on Form S-8 registration statements and may be freely sold in the public market upon issuance, except for shares held by affiliates who have certain restrictions on their ability to sell.

***The restatement of our previously issued financial statements was time-consuming and expensive and could expose us to additional risks that could materially adversely affect our financial position, results of operations and cash flows.***

On April 5, 2019, our Audit Committee, after consultation with management and KPMG LLP (KPMG), our former independent registered public accounting firm, determined that we would restate our interim condensed consolidated financial statements for the quarterly and year-to-date periods ended March 31, 2018, June 30, 2018 and September 30, 2018, included in our Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2018, June 30, 2018 and September 30, 2018, respectively. In addition, on May 14, 2019, our Board of Directors, upon the recommendation of the Audit Committee after

consultation with senior management and KPMG, determined that we would restate our audited consolidated financial statements for the year ended December 31, 2017. The consolidated financial statements and related information included in our previously filed Annual Report on Form 10-K for the year ended December 31, 2017 and Quarterly Reports on Form 10-Q for the periods ended March 31, 2018, June 30, 2018 and September 30, 2018 and all earnings press releases and similar communications issued by us for such periods should not be relied upon and are superseded in their entirety by the Annual Report on Form 10-K/A for the year ended December 31, 2018.

Accordingly, the Annual Report on Form 10-K/A as of and for the year ended December 31, 2018 includes: (1) changes to our consolidated financial statements to reflect the restatement of our audited consolidated financial statements for the year ended December 31, 2017 and our unaudited interim condensed consolidated financial statements for the quarterly and year-to-date periods ended March 31, 2018, June 30, 2018 and September 30, 2018; (2) changes as to reflect the restatement of our unaudited quarterly and year-to-date periods ended March 31, 2017, June 30, 2017 and September 30, 2017 for additional errors identified during the re-audit of our consolidated financial statements for the year ended December 31, 2017; (3) expanded risk factor disclosures within Part I, Item 1A; and (4) additional disclosures and conclusions regarding our disclosure controls and procedures and internal control over financial reporting in Part II, Item 9A.

As a result of the restatement and associated non-reliance on previously issued financial information, we became subject to a number of additional expenses and risks, including unanticipated expenses for accounting and legal fees in connection with or related to the restatement. Likewise, the attention of our management team has been diverted by these efforts. In addition, we could also be subject to additional shareholder, governmental, regulatory or other actions or demands in connection with the restatement or other matters. Any such proceedings will, regardless of the outcome, consume a significant amount of management's time and attention and may result in additional legal, accounting, insurance and other expenses. If we do not prevail in any such proceeding, we could be required to pay damages or settlement costs. In addition, the restatement and related matters could impair our reputation or could cause our customers, shareholders, or other counterparties to lose confidence in us. Any of these occurrences could have a material adverse effect on our business, results of operations, financial condition and stock price.

***If securities or industry analysts do not publish or cease publishing research or reports about us, our business or our market, or if they change their recommendations regarding our stock adversely, our stock price and trading volume could decline.***

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts may publish about us, our business, our market or our competitors. If any of the analysts who cover us change their recommendation regarding our stock adversely, or provide more favorable relative recommendations about our competitors, our stock price would likely decline. If any analyst who may cover us were to cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

***We do not expect to declare any cash dividends in the foreseeable future.***

We do not anticipate declaring any cash dividends to holders of our common stock in the foreseeable future. In addition, certain of our equipment leases and credit facilities currently restrict our ability to pay dividends. Consequently, investors may need to rely on sales of their shares of our common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investment. Investors seeking cash dividends should not purchase our common stock.

***Anti-takeover provisions contained in our Certificate of Incorporation and Bylaws, as well as provisions of Delaware law, could impair a takeover attempt.***

Our Certificate of Incorporation and Bylaws contain provisions that could delay or prevent a change in control of our company. These provisions could also make it more difficult for stockholders to nominate directors and take other corporate actions. These provisions include:

- a staggered Board of Directors;
- authorizing the Board of Directors to issue, without stockholder approval, preferred stock with rights senior to those of our common stock;
- authorizing the Board of Directors to amend our Bylaws, to increase the number of directors and to fill board vacancies until the end of the term of the applicable class of directors;
- prohibiting stockholder action by written consent;
- limiting the liability of, and providing indemnification to, our directors and officers;
- eliminating the ability of our stockholders to call special meetings; and

- requiring advance notification of stockholder nominations and proposals.

Section 203 of the Delaware General Corporation Law prohibits, subject to some exceptions, “business combinations” between a Delaware corporation and an “interested stockholder,” which is generally defined as a stockholder who becomes a beneficial owner of 15% or more of a Delaware corporation’s voting stock, for a three-year period following the date that the stockholder became an interested stockholder. We have agreed to opt out of Section 203 through our Certificate of Incorporation, but our Certificate of Incorporation contains substantially similar protections to our company and stockholders as those afforded under Section 203, except that we have agreed with Total that it and its affiliates will not be deemed to be “interested stockholders” under such protections.

These and other provisions in our Certificate of Incorporation and our Bylaws could discourage potential takeover attempts, reduce the price that investors are willing to pay in the future for shares of our common stock and result in the market price of our common stock being lower than it would be without these provisions.

***Our business is subject to risks arising from epidemic diseases, such as the recent outbreak of the COVID-19 illness.***

The recent outbreak of the Coronavirus Disease 2019, or COVID-19, which has been declared by the World Health Organization to be a “public health emergency of international concern,” has spread across the globe and is impacting worldwide economic activity. A public health epidemic, including COVID-19, poses the risk that we or our employees, contractors, suppliers, and other partners may be prevented from conducting business activities for an indefinite period of time, including due to shutdowns that may be requested or mandated by governmental authorities. While it is not possible at this time to estimate the impact that COVID-19 could have on our business, the continued spread of COVID-19 and the measures taken by the governments of countries affected could disrupt the supply chain and the manufacture or shipment of our products and adversely impact our business, financial condition or results of operations. The COVID-19 outbreak and mitigation measures may also have an adverse impact on global economic conditions which could have an adverse effect on our business and financial condition. The extent to which the COVID-19 outbreak impacts our results will depend on future developments that are highly uncertain and cannot be predicted, including new information that may emerge concerning the severity of the virus and the actions to contain its impact.

## ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

## ITEM 2. PROPERTIES

The following is a summary of our principal facilities as of December 31, 2019. We lease our principal office and research and development facilities located in Emeryville, California. We hold a 50% ownership interest in a manufacturing facility and related land located in Leland, North Carolina and lease a pilot plant and demonstration facility and related office and laboratory space located in Campinas, Brazil. Our lease agreements expire at various dates through the year 2031.

| Location | Approximate Square Feet | Operations |
|---|---|---|
| *U.S.* | | |
| Emeryville, California | 136,000 | Executive offices; research and development, administrative and pilot plant |
| Leland, North Carolina | 19,400 | Manufacturing (joint venture with Nikko) |
| *BRAZIL* | | |
| Campinas, Brazil | 44,000 | Pilot plant, research and development and administrative |

We believe that our current facilities are suitable and adequate to meet our needs and that suitable additional space will be available to accommodate the foreseeable expansion of our operations. Based on our anticipated volume requirements for 2020 and beyond, we will likely need to identify and secure access to additional production capacity in 2020 and beyond, which we plan to obtain by constructing new facilities and by increasing our use of contract manufacturers, including our collaboration partner, DSM. We are currently making plans to secure such additional capacity.

## ITEM 3. LEGAL PROCEEDINGS

On April 3, 2019, a securities class action complaint was filed against Amyris and our CEO, John G. Melo, and former CFO (and current Chief Business Officer), Kathleen Valiasek, in the U.S. District Court for the Northern District of California. The complaint seeks unspecified damages on behalf of a purported class that would comprise all persons and entities that purchased or otherwise acquired our securities between March 15, 2018 and March 19, 2019. The complaint, which was amended by the lead plaintiff on September 13, 2019, alleges securities law violations based on statements and omissions made by the Company during such period. On October 25, 2019, the defendants filed a motion to dismiss the securities class action complaint. The hearing on such motion to dismiss was held on February 18, 2020 and we are awaiting a ruling from the Court. Subsequent to the filing of the securities class action complaint described above, on June 21, 2019 and October 1, 2019, respectively, two separate purported shareholder derivative complaints were filed in the U.S. District Court for the Northern District of California (Bonner v. Doerr, et al., and Carlson v. Doerr, et al.) based on similar allegations to those made in the securities class action complaint described above and named the Company and certain of the Company’s current and former officers and directors as defendants. The derivative lawsuits sought to recover, on the Company’s behalf, unspecified damages purportedly sustained by the Company in connection with allegedly misleading statements and omissions made in connection with the Company’s securities filings. The derivative lawsuits were dismissed on October 18, 2019 (Bonner) and December 10, 2019 (Carlson), without prejudice. We believe the securities class action complaint lacks merit, and intend to continue to defend ourselves vigorously. Given the early stage of these proceedings, it is not yet possible to reliably determine any potential liability that could result from these matters.

We may be involved, from time to time, in legal proceedings and claims arising in the ordinary course of our business. Such matters are subject to many uncertainties and there can be no assurance that legal proceedings arising in the ordinary course of business or otherwise will not have a material adverse effect on our business, results of operations, financial position or cash flows. For additional information, see "Other Matters" in Note 9, "Commitments and Contingencies" in Part II, Item 8 of this Annual Report on Form 10-K.

## ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

## PART II

## ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

### Market Information for Common Stock

Our common stock is traded on the Nasdaq Global Select Market under the symbol AMRS.

At March 6, 2020, there were 71 holders of record (not including beneficial holders of stock held in street names) of our common stock.

### Dividend Policy

We have never declared or paid any cash dividend on our common stock. We intend to retain any future earnings and do not expect to pay cash dividends in the foreseeable future.

### Recent Sales of Unregistered Equity Securities and Use of Proceeds

For information regarding unregistered sales of our equity securities during the two years ended December 31, 2019, see the financial statements included in Part II, Item 8 of this Annual Report on Form 10-K.

See Note 15, "Subsequent Events" in Part II, Item 8 of this Annual Report on Form 10-K for information regarding unregistered sales of our equity securities subsequent to December 31, 2019.

### Securities Authorized for Issuance under Equity Compensation Plans

The following table shows certain information concerning our common stock reserved for issuance in connection with our 2005 Stock Option/Stock Issuance Plan, our 2010 Equity Incentive Plan and our 2010 Employee Stock Purchase Plan, all as of December 31, 2019:

| Plan category | Number of securities to be issued upon exercise of outstanding options, warrants and rights | Weighted-average exercise price of outstanding options | Number of securities to be issued upon vesting of outstanding restricted stock units | Number of securities remaining available for future issuance under equity compensation plans(1)(2) |
|---|---|---|---|---|
| Equity compensation plans approved by security holders | 5,620,419 | $ 10.27 | 5,782,651 | 4,079,422 |
| Equity compensation plans not approved by security holders | — | — | — | — |
| Total | 5,620,419 | $ 10.27 | 5,782,651 | 4,079,422 |

(1) Includes 3,815,625 shares reserved for future issuance under our 2010 Equity Incentive Plan and 263,797 shares reserved for future issuance under our 2010 Employee Stock Purchase Plan. No shares are reserved for future issuance under our 2005 Stock Option/Stock Issuance Plan other than shares issuable upon exercise of equity awards outstanding under such plan.

(2) Effective January 1, 2019, the number of shares available for future issuance under our 2010 Equity Incentive Plan increased by 5,887,133 shares pursuant to the automatic increase provision contained in the 2010 Equity Incentive Plan and the number of shares available for future issuance under our 2010 Employee Stock Purchase Plan increased by 588,713 shares, in each case pursuant to automatic increase provisions contained in the respective plans, as discussed in more detail below.

Our 2010 Equity Incentive Plan includes all shares of our common stock reserved for issuance under our 2005 Stock Option/Stock Issuance Plan immediately prior to our initial public offering that were not subject to outstanding grants as of the completion of such offering. In addition, any shares of our common stock (i) issuable upon exercise of stock options granted under our 2005 Stock Option/Stock Issuance Plan that cease to be subject to such options and (ii) issued under our 2005 Stock Option/Stock Issuance Plan that are forfeited or repurchased by us at the original issue price, will become part of our 2010 Equity Incentive Plan reserve.

The number of shares available for grant and issuance under our 2010 Equity Incentive Plan is increased on January 1 of each year during the term of the plan by an amount equal to the lesser of (1) five percent (5%) of our shares outstanding on the immediately preceding December 31 and (2) a number of shares as may be determined by our Board of Directors or the Leadership Development and Compensation Committee in their discretion. In addition, shares will again be available for grant and issuance under our 2010 Equity Incentive Plan that are:

- subject to issuance upon exercise of an option or stock appreciation right granted under our 2010 Equity Incentive Plan and that cease to be subject to such award for any reason other than the award's exercise;

- subject to an award granted under our 2010 Equity Incentive Plan and that are subsequently forfeited or repurchased by us at the original issue price;

- surrendered pursuant to an exchange program; or

- subject to an award granted under our 2010 Equity Incentive Plan that otherwise terminates without shares being issued.

The number of shares reserved for issuance under our 2010 Employee Stock Purchase Plan is increased on January 1 of each year during the term of the plan by an amount equal to the lesser of (1) one percent (1%) of our shares outstanding on the immediately preceding December 31 and (2) a number of shares as may be determined by our Board of Directors or the Leadership Development and Compensation Committee of the Board in their discretion, provided that the aggregate number of shares issued over the term of our 2010 Employee Stock Purchase Plan shall not exceed 1,666,666 shares.

For more information regarding our 2010 Equity Incentive Plan and 2010 Employee Stock Purchase Plan, see Note 11, "Stock-based Compensation" in Part II, Item 8 of this Annual Report on Form 10-K.

## ITEM 6. SELECTED FINANCIAL DATA

Not applicable for smaller reporting companies.

## ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

### Overview

As a leading industrial biotechnology company, we apply our technology platform to engineer, manufacture and sell high performance, natural, sustainably-sourced products into the Health & Wellness, Clean Beauty, and Flavor & Fragrance markets. Our proven technology platform enables us to rapidly engineer microbes and use them as catalysts to metabolize renewable, plant-sourced sugars into large volume, high-value ingredients. Our biotechnology platform and industrial fermentation process replace existing complex and expensive manufacturing processes. We have successfully used our technology to develop and produce nine distinct molecules at commercial volumes, leading to more than 17 commercial ingredients used by thousands of leading global brands.

We believe that industrial synthetic biology represents a third industrial revolution, bringing together biology and engineering to generate new, more sustainable materials to meet the growing global demand for bio-based replacements for petroleum-based and traditional animal- or plant-derived ingredients. We continue to build demand for our current portfolio of products through an extensive sales network provided by our collaboration partners that represent leading companies for our target market sectors. We also have a small group of direct sales and distributors who support our Clean Beauty market. Via our partnership model, our partners invest in the development of each molecule to bring it from the lab to commercial-scale and use their extensive sales force to sell our ingredients and formulations to their customers as part of their core business. We capture long-term revenue both through the production and sale of the molecule to our partners and through royalty revenues from our partners' product sales to their customers.

We were founded in 2003 in the San Francisco Bay area by a group of scientists from the University of California, Berkeley. Our first major milestone came in 2005 when, through a grant from the Bill & Melinda Gates Foundation, we developed technology capable of creating microbial strains that produce artemisinic acid, which is a precursor of artemisinin, an effective anti-malarial drug. In 2008, we granted royalty-free licenses to allow Sanofi-Aventis to produce artemisinic acid using our technology. Building on our success with artemisinic acid, in 2007 we began applying our technology platform to develop, manufacture and sell sustainable alternatives to a broad range of markets.

We focused our initial development efforts primarily on the production of Biofene®, our brand of renewable farnesene, a long-chain, branched hydrocarbon molecule that we manufacture through fermentation using engineered microbes. Our farnesene derivatives are sold in hundreds of products as nutraceuticals, skincare products, fragrances, solvents, polymers, and lubricant ingredients. The commercialization of farnesene pushed us to create a more cost efficient, faster and accurate development process in the lab and drive manufacturing costs down. This investment has enabled our technology platform to rapidly develop microbial strains and commercialize target molecules. In 2014, we began manufacturing additional molecules for the Flavor & Fragrance industry; in 2015 we began investing to expand our capabilities to other small molecule chemical classes beyond terpenes via our collaboration with the Defense Advanced Research Projects Agency (DARPA); and in 2016 we expanded into proteins.

We have invested over $700 million in infrastructure and technology to create microbes that produce molecules from sugar or other feedstocks at commercial-scale. This platform has been used to design, build, optimize and upscale strains producing nine distinct molecules at commercial volumes, leading to more than 17 commercial ingredients used by thousands of leading global brands. Our time to market for molecules has decreased from seven years to less than a year for our most recent molecule, mainly due to our ability to leverage the technology platform we have built.

Our technology platform has been in active use since 2007 and has been integrated with our commercial production since 2011, creating an organism development process that we believe makes us an industry leader in the successful scale-up and commercialization of biotech-produced ingredients. The key performance characteristics of our platform that we believe differentiate us include our proprietary computational tools, strain construction tools, screening and analytics tools, and advanced lab automation and data integration. Having this fully integrated with our large-scale manufacturing process and capability enables us to always engineer with the end specification and requirements guiding our technology. Our state-of-the-

art infrastructure includes industry-leading strain engineering and lab automation located in Emeryville, California, pilot-scale production facilities in Emeryville, California and Campinas, Brazil, a demonstration-scale facility in Campinas, Brazil and a commercial-scale production facility in Leland, North Carolina, which is owned and operated by our Aprinnova joint venture to convert our Biofene into squalane and other final products.

We are able to use a wide variety of feedstocks for production, but have focused on accessing Brazilian sugarcane for our large-scale production because of its renewability, low cost and relative price stability. We have also successfully used other feedstocks such as sugar beets, corn dextrose, sweet sorghum and cellulosic sugars at various manufacturing facilities.

Several years ago, we made the strategic decision to transition our business model from collaborating and commercializing molecules in low margin commodity markets to higher margin specialty markets. We began the transition by first commercializing and supplying farnesene-derived squalane as a cosmetic ingredient sold to formulators and distributors. We also entered into collaboration and supply agreements for the development and commercialization of molecules within the Flavor & Fragrance and Clean Beauty markets where we utilize our strain generation technology to develop molecules that meet the customer's rigorous specifications.

During this transition, we solidified the business model of partnering with our customers to create sustainable, high performing, low-cost molecules that replace an ingredient in their supply chain, commercially scale and manufacture those molecules, and share in the profits earned by our customers once our customer sells its product into these specialty markets. These three steps constitute our grants and collaborations revenues, renewable product revenues, and royalty revenues.

During 2017, we completed several development agreements with DSM and others for new products such as Vitamin A, a human nutrition molecule and others, and in late 2018 we began commercial production and shipment of an alternative sweetener product developed from the Reb M molecule, which is a superior sweetener and sugar replacement. Our goal is to bring two to three new molecules per year to commercial production in the future.

In 2017, we monetized the use of one of our lower margin molecules, farnesene, in the Vitamin E and Lubricants specialty markets while retaining any associated royalties, and licensed farnesene to Koninklijke DSM N.V. (DSM) for use in these fields. Also in 2017, we sold to DSM our subsidiary Amyris Brasil Ltda. (Amyris Brasil), which operated our purpose-built, large-scale manufacturing facility located in Brotas, Brazil.

The Brotas facility was built to batch manufacture one commodity product at a time (originally for high-volume production of biofuels, a business Amyris has exited), which is an inefficient manufacturing process that is not suited for the high margin specialty markets in which we operate today. We currently manufacture nine specialty products and expect to increase the number of specialty products we manufacture by two to three products a year. The inefficiencies we experienced included having to idle the facility for two weeks at a time to prepare for the next product batch manufacture. These inefficiencies caused our cost of goods sold to be significantly higher. As a result, we are building a new purpose-built, large-scale specialty ingredients plant in Brazil, which we anticipate will allow for the manufacture of five products concurrently, including our alternative sweetener product, and over 10 different products annually. In September 2019, we obtained the necessary permits and broke ground on our new specialty ingredients plant and expect the facility to be fully operational in the first quarter of 2021. During construction, we are manufacturing our products at four contract manufacturing sites in Brazil, the U.S. and Spain.

Also, as part of the December 2017 sale of Brotas, we contracted with DSM for the use of Brotas to manufacture products for us to fulfill our product supply commitments to our customers until the new production facility is built and becomes operational, and in November 2018, we amended the supply agreement with DSM to secure capacity at the Brotas facility for production of our alternative sweetener product through 2022.

In May 2019 we entered into an agreement with Raizen Energia S.A. (Raizen) for the formation and operation of a joint venture relating to the production, sale and commercialization of alternative sweetener products whereby the parties would construct a manufacturing facility exclusively for sweetener molecules on land owned by Raizen and leased to the joint venture.

Also, in May 2019, we consummated a research, collaboration and license agreement with LAVVAN, Inc., a newly formed investment-backed company (Lavvan), for up to $300 million to develop, manufacture and commercialize cannabinoids. Under the Cannabinoid Agreement, we would perform research and development activities and Lavvan would be responsible for the commercialization of the cannabinoids developed under the agreement. The Cannabinoid Agreement is being principally funded on a milestone basis, with Amyris also entitled to receive certain supplementary research and development funding from Lavvan. We could receive aggregate funding of up to $300 million over the term of the Cannabinoid

Agreement if all of the milestones are achieved. Additionally, the Cannabinoid Agreement provides for profit share to Amyris on Lavvan's gross profit margin once products are commercialized; these payments will be due for the next 20 years.

***Sales and Revenue***

We recognize revenue from product sales, license fees and royalties, and grants and collaborations.

We have research and development collaboration arrangements for which we receive payments from our collaboration partners, which include DARPA, DSM, Firmenich SA (Firmenich), Givaudan International SA (Givaudan), Lavvan and others. Some of our collaboration arrangements provide for advance payments to us in consideration for grants of exclusivity or research efforts that we will perform. In 2017 we signed collaboration agreements for an infant nutrition ingredient, and in 2018 and 2019 we signed a collaboration agreement for four vitamins that we expect will contribute to our collaboration revenue and ultimately product sales. Also, in 2019 we signed a collaboration agreement for up to $300 million to develop cannabinoids. Our collaboration agreements, which may require us to achieve milestones prior to receiving payments, are expected to contribute revenues from product sales and royalties if and when they are commercialized. See Note 9, “Revenue Recognition” in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

All of our non-government partnerships include commercial terms for the supply of molecules we successfully upscale and produce at commercial volumes. The first molecule to generate revenue for us outside of farnesene was a fragrance molecule launched in 2015. Since the launch, the product has continued to grow in sales year over year. In 2016, we launched our second fragrance molecule and in 2017, we launched our third fragrance molecule as well as our first cosmetic active ingredient. Our partners for these molecules are indicating continued strong growth due to their cost advantaged position, high purity and sustainable production method. We are continuing to identify new opportunities to apply our technology and deliver sustainable access to key molecules. As a result, we have a pipeline that we believe can deliver two to three new molecules each year over the coming years with a flavor ingredient, a cosmetic active ingredient and a fragrance molecule. In 2019, we commercially produced and shipped our Reb M product that is a sweetener and sugar replacement for food and beverages.

Concurrent with the December 2017 sale of Amyris Brasil and the Brotas facility, we entered into a series of commercial agreements with DSM that included (i) a license agreement to DSM of our farnesene product for DSM to use in the Vitamin E and lubricant specialty markets and (ii) a royalty agreement, pursuant to which DSM agreed to pay us specified royalties representing a portion of the profit on the sale of Vitamin E produced from farnesene sold under a supply agreement with Nenter & Co., Inc. (Nenter) which was assigned to DSM. Under the terms of the royalty agreement, DSM was obligated to pay us minimum royalties totaling $18.1 million for 2019 and 2020. In June 2018, we received the 2019 non-refundable minimum royalty payment totaling $9.3 million (net of a $0.7 million early payment discount) and in March 2019, we received the 2020 non-refundable payment totaling $7.4 million (net of a $0.7 million early payment discount). In April 2019, we assigned the right to receive such royalty payments under the Vitamin E royalty agreement to DSM for total consideration of $57 million, of which approximately $40.3 million was recognized as royalty revenue in 2019. See Note 9, “Revenue Recognition” and Note 10, "Related Party Transactions" in Part II, Item 8 of this Annual Report on Form 10-K for information regarding the accounting treatment of the assignment of Vitamin E royalty agreement and for a full listing of our agreements with DSM.

We have several other collaboration molecules in our development pipeline with partners including DSM, Givaudan, Firmenich and Lavvan that we expect will contribute revenues from product sales and royalties if and when they are commercialized.

**Critical Accounting Policies and Estimates**

Management's discussion and analysis of results of operations and financial condition are based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. (U.S. GAAP). We believe that the critical accounting policies described in this section are those that significantly impact our financial condition and results of operations and require the most difficult, subjective or complex judgements, often as a result of the need to make estimates about the effects of matters that are inherently uncertain. Because of this uncertainty, actual results may vary from these estimates.

Our most critical accounting estimates include:

- Recognition of revenue including arrangements with multiple performance obligations;
- Valuation and allocation of fair value to various elements of complex related party transactions;
- The valuation of freestanding and embedded derivatives, which impacts gains or losses on such derivatives, the carrying value of debt, interest expense and deemed dividends; and

- The valuation of debt for which we have elected fair value accounting.

For a more detailed discussion of our critical accounting estimates and policies, see Note 1, "Basis of Presentation and Summary of Significant Accounting Policies" in Part II, Item 8 of this 2019 Form 10-K.

**Results of Operations**

***Revenue***

| **Years Ended December 31, (In thousands)** | **2019** | **2018** | **2019 vs 2018 % Change** |
|---|---|---|---|
| Revenue: | | | |
| Renewable products | $ 59,872 | $ 33,598 | 78 % |
| Licenses and royalties | 54,043 | 7,658 | 606 % |
| Grants and collaborations | 38,642 | 22,348 | 73 % |
| Total revenue | $ 152,557 | $ 63,604 | 140 % |

Total revenue increased by 140% to $152.6 million in 2019. Renewable products revenue increased by 78% to $59.9 million in 2019, primarily due to (i) $15.9 million of consumer products revenue in 2019 through a combination of retail and direct e-commerce sales, as compared to $4.6 million in 2018; (ii) a $4.9 million increase in product revenue from sales to Firmenich; (iii) a $3.4 million increase from sales to Givaudan; and (iv) a $2.8 million increase in squalane sales.

Licenses and royalties revenue increased by 606% to $54.0 million in 2019, primarily due to a $43.1 million increase in royalty revenues as the result of our sale and assignment of the Vitamin E Value Sharing Agreement to DSM, and a $3.3 million increase in royalties from fragrance product sales.

Grants and collaborations revenue increased by 73% to $38.6 million in 2019, primarily due to $18.3 million of revenue from Lavvan in 2019 in connection with a CBD collaboration agreement, and $5.7 million of vitamin-related collaboration revenue from Yifan, less a $4.3 million decrease in collaboration revenue from Firmenich, a $2.9 million decrease in grant revenue from DARPA and a $2.9 million decrease in collaboration revenue from Givaudan.

Our revenues are dependent on the timing and nature of arrangements entered into with our customers, which may include multiple performance obligations for which revenue accounting requires significant judgement and estimates. Based on the nature of our customer arrangements, our revenues may vary significantly from one period to the next.

***Cost and Operating Expenses***

| **Years Ended December 31, (In thousands)** | **2019** | **2018** | **2019 vs 2018 % Change** |
|---|---|---|---|
| Cost of products sold | $ 76,185 | $ 36,698 | 108 % |
| Research and development | 71,460 | 68,722 | 4 % |
| Sales, general and administrative | 126,586 | 90,902 | 39 % |
| Impairment of other assets | 216 | 3,865 | (94)% |
| Total cost and operating expenses | $ 274,447 | $ 200,187 | 37 % |

*Cost of Products Sold*

Cost of products sold includes the costs of raw materials, labor and overhead, amounts paid to contract manufacturers, inventory write-downs resulting from applying lower of cost or net realizable value inventory adjustments, and costs related to production scale-up. Because of our product mix, our cost of products sold does not change proportionately with changes in renewable product revenue.

Cost of products sold increased by 108% to $76.2 million in 2019, primarily due to a 78% increase in renewable products revenue, and significant non-recurring production costs related to the launch of certain new products.

*Research and Development Expenses*

Research and development expenses increased by 4% to $71.5 million in 2019, primarily due to increases in laboratory supplies and employee compensation. The laboratory supplies increase was related to the procurement of additional leased

equipment to expand research and product development. Employee compensation increased primarily as the result of competitive changes to the Company's base salary and bonus structure for most personnel at the beginning of 2019, and higher employee benefits costs.

*Sales, General and Administrative Expenses*

Sales, general and administrative expenses increased by 39% to $126.6 million in 2019, primarily due to increases in employee staffing, outside services, sales and marketing spending to support the growth of our Biossance, Pipette and Purecane product lines, and significantly increased audit fees and accounting advisory services related to the 2017 annual and 2018 quarterly financial restatements performed in 2019.

*Impairment of Other Assets*

In 2019 and 2018, we impaired $0.2 million and $3.9 million, respectively, of contingent consideration that had been recorded in 2017 in connection with the December 2017 sale of our factory in Brasil.

***Other Income (Expense), Net***

| Years Ended December 31, (In thousands) | 2019 | 2018 | 2019 vs 2018 % Change |
|---|---|---|---|
| Loss on divestiture | $ — | $ (1,778) | (100)% |
| Interest expense | (58,665) | (42,703) | 37 % |
| Gain (loss) from change in fair value of derivative instruments | 2,777 | (30,880) | (109)% |
| (Loss) gain from change in fair value of debt | (19,369) | 2,082 | nm |
| Loss upon extinguishment of debt | (44,208) | (17,424) | 154 % |
| Other expense, net | (783) | (2,949) | (73)% |
| Total other expense, net | $ (120,248) | $ (93,652) | 28 % |

nm = not meaningful

Total other expense, net was $120.2 million in 2019, compared to $93.7 million in 2018. The $26.6 million increase was primarily comprised of a $26.8 million increase in loss upon extinguishment of debt, a $21.5 million unfavorable swing in change in fair value of debt from a gain to a loss, and a $16.0 million increase in interest expense, partly offset by a $33.7 million favorable swing in change in fair value of derivative instruments from a loss to a gain. The increases in loss upon extinguishment of debt, loss from change in fair value of debt and interest expense were primarily related to (i) the write-off of unamortized debt discounts upon the modification of a debt instrument accounted for as an extinguishment, (ii) upfront expense recognition of the fair value of warrants issued in connection with new borrowings, refinancings and maturity date extensions with existing lenders, (iii) upfront expense recognition of debt discounts paid and end of term fees due to existing lenders in connection with additional borrowings and maturity date extensions, and (iv) penalties, waiver fees and default interest related to covenant violations, events of default under certain debt instruments and in connection with forbearance agreements. See Note 1, "Basis of Presentation and Summary of Significant Accounting Policies–Fair Value Measures" in Part II, Item 8 of this Annual Report on Form 10-K for a discussion regarding how our closing stock price at the end of the period or immediately prior to the extinguishment of an embedded derivative or debt or warrant instrument can affect the fair value of our derivative liabilities and our debt.

***Income Taxes***

For 2019, we recorded $0.6 million income tax expense related to accrued interest on uncertain tax positions. For 2018, we recorded $0 income tax expense as a result of recording a full valuation allowance against our net deferred tax assets due to our history of losses and the unlikelihood of timely recovery of such tax assets.

See Note 13, "Income Taxes" in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

## Liquidity and Capital Resources

| Years Ended December 31, (In thousands) | | 2019 | | 2018 |
|---|---|---|---|---|
| Net cash (used in) provided by: | | | | |
| Operating activities | $ | (156,933) | $ | (109,366) |
| Investing activities | $ | (13,080) | $ | (12,472) |
| Financing activities | $ | 124,910 | $ | 107,957 |

***Liquidity***

We have incurred significant operating losses since our inception, and we expect to continue to incur losses and negative cash flows from operations through at least the next 12 months following the issuance of this Annual Report on Form 10-K. As of December 31, 2019, we had negative working capital of $87.5 million, an accumulated deficit of $1.8 billion, and cash and cash equivalents of $0.3 million.

As of December 31, 2019, our debt (including amounts owed to related parties), net of a $20.3 million discount and a $15.4 million fair value adjustment, totaled $261.8 million, of which $63.8 million is classified as current. However, $75.0 million of debt was converted into equity in January 2020; see Note 15, "Subsequent Events" for more information. Our debt agreements contain various covenants, including certain restrictions on our business — including restrictions on additional indebtedness, material adverse effect and cross default provision — that could cause us to be at risk of default. A failure to comply with the covenants and other provisions of our debt instruments, including any failure to make payments when required, would generally result in events of default under such instruments, which could result in the acceleration of a substantial portion of such indebtedness. Acceleration would generally also constitute an event of default under our other outstanding debt instruments, which could result in the acceleration of a substantial portion of such debt instruments. At December 31, 2019, we failed to meet certain covenants under several credit arrangements, including those associated with cross-default provisions, minimum liquidity requirements and minimum asset coverage requirements. In March 2020, these lenders provided permanent waivers to us for breaches of all past covenant violations and cross-default payment failures (discussed below), through March 13, 2020 under the respective credit agreements, and significantly reduced the minimum liquidity requirement and substantially increased the base of eligible assets to calculate the asset coverage requirement.

On January 31, 2020, we failed to pay Total Raffinage Chimie (Total), Nikko Chemicals Co. Ltd (Nikko) and certain affiliates of the Schottenfeld Group LLC (Schottenfeld) an aggregate of $22.5 million of maturing promissory notes, and previously on December 15, 2019 failed to pay Ginkgo $5.2 million of past due interest, past due partnership payments and the first installment of a waiver fee. These failures resulted in an event of default under the respective agreements and triggered cross-defaults under other debt instruments, which permitted the holders of such debt instruments to accelerate the amounts owing under such instruments. We subsequently received waivers from each of the affected cross-default debt holders to waive the right to accelerate due to the event specific cross-defaults. As a result, the indebtedness for which we have obtained such waivers continues to be classified as noncurrent on the Company's balance sheet in accordance with such debt's terms. The indebtedness of Total and certain Ginkgo, Nikko and Schottenfeld amounts continue to be classified as current liabilities on our balance sheet to the extent that payment due dates are within one year of December 31, 2019.

Subsequent to December 31, 2019, we (i) obtained a waiver and forbearance agreement from Schottenfeld, (ii) amended the credit arrangements with Total and Nikko Notes to extend the maturity date of the original promissory notes, and (iii) entered into a waiver and amendment to the partnership agreement with Ginkgo to waive all past payment defaults under the Ginkgo Note and Ginkgo Partnership Agreement, and to extend the payment due date and modify the periodic partnership payment timing and amount. See Note 15, "Subsequent Events" for further information.

Although we obtained extensions to make these payments, we currently do not have sufficient funds to repay the amounts due under the Total, Nikko, Schottenfeld and Ginkgo credit arrangements, and while we intend to seek equity financing, the proceeds of which would be used to repay Total, Nikko, Schottenfeld and Ginkgo, there can be no assurance that we will be able to obtain such financing on our expected timeline, or on acceptable terms, if at all. Also, while we have been able to cure these defaults to date to avoid additional cross-acceleration, we may not be able to cure such a default promptly in the future. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. See Note 1, Basis of Presentation and Summary of Accounting Policies" in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

Our consolidated financial statements as of and for the year ended December 31, 2019 have been prepared on the basis that we will continue as a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. Due to the factors described above, there is substantial doubt about our ability to continue as a going

concern within one year after the date that the financial statements in this Annual Report on Form 10-K are issued. Our ability to continue as a going concern will depend, in large part, on our ability to raise additional proceeds through financings, achieve positive cash flows from operations during the next 12 months from the date of this filing, and refinance or extend other existing debt maturities occurring later in 2020, which is uncertain. The financial statements do not include any adjustments that might result from the outcome of this uncertainty, which could have a material adverse effect on our financial condition. In addition, if we are unable to continue as a going concern, we may be unable to meet our obligations under our existing debt facilities, which could result in the acceleration of such debt payment obligations, and we may be forced to liquidate our assets. In such a scenario, the values we receive for our assets in liquidation or dissolution could be significantly lower than the values reflected in our consolidated balance sheet.

Our operating plan for 2020 contemplates a significant reduction in our net cash outflows resulting from (i) revenue growth from sales of existing and new products with positive gross margins, (ii) reduced production costs as a result of manufacturing and engineering developments, and (iii) cash inflows from collaborations and grants. These factors are expected to improve our liquidity.

If we are unable to generate sufficient cash inflows from product sales and collaboration arrangements, and draw sufficient funds from current or pending financing arrangements, we will need to obtain additional funding from equity or other debt financings, which may not occur timely or on reasonable terms, if at all, and agree to burdensome covenants, grant further security interests in our assets, enter into collaboration and licensing arrangements that require us to relinquish commercial rights, or grant licenses on terms that are not favorable.

If we do not achieve our planned operating results, our ability to continue as a going concern will be jeopardized and we may need to take the following actions to support our liquidity needs in 2020:

- Shift focus to existing products and customers with significantly reduced investment in new product and commercial development efforts;
- Reduce expenditures for third party contractors, including consultants, professional advisors and other vendors;
- Reduce or delay uncommitted capital expenditures, including expenditures related the construction and commissioning of the new production facility in Brazil, nonessential facilities and lab equipment, and information technology projects; and
- Closely monitor our working capital position with customers and suppliers, as well as suspend operations at pilot plants and demonstration facilities.

Implementing this plan could negatively impact our ability to continue our business as currently contemplated, including, without limitation, delays or failures in our ability to:

- Achieve planned production levels;
- Develop and commercialize products within planned timelines or at planned scales; and
- Continue other core activities.

We expect to fund operations for the foreseeable future with cash currently on hand, cash inflows from collaborations, grants, product sales, licenses and royalties and equity and debt financings, to the extent necessary. Some of our research and development collaborations are subject to the risk that we may not meet milestones. Future equity and debt financings, if needed, are subject to the risk that we may not be able to secure financing in a timely manner or on reasonable terms, if at all. Our planned working capital and capital expenditure needs for 2020 are dependent on significant inflows of cash from renewable product sales, new collaborations, and licenses and royalties from existing collaboration partners.

For details, see the following Notes in Part II, Item 8 of this Annual Report on Form 10-K:

- Note 4, "Debt"
- Note 5, "Mezzanine Equity"
- Note 6, "Stockholders' Deficit"

***Cash Flows during the Years Ended December 31, 2019 and 2018***

*Cash Flows from Operating Activities*

Our primary uses of cash from operating activities are for personnel costs and costs related to the production and sales of our products, offset by cash received from sales to customers.

For the year ended December 31, 2019, net cash used in operating activities was $156.9 million, which was primarily comprised of our $242.8 million net loss and an increase of $23.8 million in working capital, partly offset by $109.6 million of

non-cash charges. Non-cash charges were primarily comprised of a $44.2 million loss upon extinguishment of debt, a $19.4 million loss from change in fair value of debt, $12.6 million of amortization of right-of-use assets under operating leases, $12.6 million of stock-based compensation expense and $11.7 million of debt discount accretion. The increase in working capital was primarily comprised of an $18.0 million increase in inventories, a $17.1 million decrease in lease liabilities, a $13.2 million increase in deferred cost of products sold, an $8.1 million increase in prepaid expenses and other assets, and a $6.9 million decrease in contract liabilities, mostly offset by a $42.7 million combined increase in accounts payable and accrued and other liabilities.

For the year ended December 31, 2018, net cash used in operating activities was $109.4 million, which was comprised of our $230.2 million net loss, partly offset by $96.3 million of non-cash charges and a $24.6 million decrease in working capital. Non-cash charges consisted primarily of a $30.9 million loss from change in fair value of derivative instruments, $16.6 million of debt discount accretion, $9.2 million of stock-based compensation, $6.8 million of warrants fair value recorded as legal expense, and $4.9 million of depreciation and amortization. The decrease in working capital was primarily comprised of an $11.6 million increase in accounts payable, an $8.1 million decrease in unbilled receivables and a $7.4 million decrease in accounts receivable.

*Cash Flows from Investing Activities*

For the year ended December 31, 2019, net cash used in investing activities was $13.1 million and was comprised of property, plant and equipment purchases.

For the year ended December 31, 2018, net cash provided by investing activities was $12.5 million and was comprised of property, plant and equipment purchases.

*Cash Flows from Financing Activities*

For the year ended December 31, 2019, net cash provided by financing activities was $124.9 million, primarily comprised of $189.2 million of net proceeds from debt issued and $53.7 million from the exercises of warrants and sales of common stock, partly offset by $112.4 million of debt principal payments.

For the year ended December 31, 2018, net cash provided by financing activities was $108.0 million, primarily comprised of $57.8 million of proceeds from the exercise of warrants to purchase common stock and $94.4 million from debt issued, partly offset by $41.7 million of debt principal payments.

***Off-Balance Sheet Arrangements***

None.

***Contractual Obligations***

The following is a summary of our contractual obligations as of December 31, 2019:

| Payable by Year Ended December 31, (In thousands) | Total | 2020 | 2021 | 2022 | 2023 | 2024 | Thereafter |
|---|---|---|---|---|---|---|---|
| Principal payments on debt | $297,462 | $ 74,551 | $ 68,572 | $115,538 | $ 36,840 | $ 307 | $ 1,654 |
| Interest payments on debt | 82,095 | 39,324 | 28,513 | 13,457 | 494 | 91 | 216 |
| Financing and operating leases | 35,668 | 12,288 | 12,106 | 7,719 | 3,363 | 192 | — |
| Manufacturing capacity reservation fee | 6,893 | 6,893 | — | — | — | — | — |
| Partnership payment obligation | 11,112 | 5,556 | 3,175 | 2,381 | — | — | — |
| Contract termination fee | 3,670 | 3,670 | — | — | — | — | — |
| Total | $436,900 | $142,282 | $112,366 | $139,095 | $ 40,697 | $ 590 | $ 1,870 |

**ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

Not applicable for smaller reporting companies.

## ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

### AMYRIS, INC.

### INDEX TO CONSOLIDATED FINANCIAL STATEMENTS


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# Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Amyris, Inc.

***Opinion on the Consolidated Financial Statements***

We have audited the accompanying consolidated balance sheets of Amyris, Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive loss, stockholders' deficit and mezzanine equity, and cash flows for each of the two years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of their operations and their cash flows for each of the two years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") and our report dated March 13, 2020 expressed an adverse opinion thereon.

***Going Concern***

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses from operations, has an accumulated deficit of $1.8 billion and current debt service requirements that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

***Changes in Accounting Principles***

As discussed in Note 1to the consolidated financial statements, the Company has changed its accounting method of accounting for leases on January 1, 2019, due to the adoption of Financial Accounting Standard Board's Accounting Standards Codification 842, Leases. . The Company also amended the classification of certain equity-linked financial instruments with down round features and the respective disclosure requirements in fiscal year 2019 due to adoption of Accounting Standards Update No. 2017-11.

***Basis for Opinion***

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provides a reasonable basis for our opinion.

/s/ Macias Gini & O'Connell LLP

We have served as the Company's auditor since 2019.

San Francisco, California
March 13, 2020

# AMYRIS, INC.
# CONSOLIDATED BALANCE SHEETS

| December 31,<br>(In thousands, except shares and per share amounts) | 2019 | 2018 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 270 | $ 45,353 |
| Restricted cash | 469 | 741 |
| Accounts receivable, net of allowance of $45 and $642, respectively | 16,322 | 16,003 |
| Accounts receivable - related party, net of allowance of $0 and $0, respectively | 3,868 | 1,349 |
| Accounts receivable, unbilled - related party | — | 8,021 |
| Contract assets | 8,485 | — |
| Inventories | 27,770 | 9,693 |
| Deferred cost of products sold - related party | 3,677 | 489 |
| Prepaid expenses and other current assets | 12,750 | 10,566 |
| Total current assets | 73,611 | 92,215 |
| Property, plant and equipment, net | 28,930 | 19,756 |
| Contract assets, noncurrent - related party | 1,203 | 1,203 |
| Deferred cost of products sold, noncurrent - related party | 12,815 | 2,828 |
| Restricted cash, noncurrent | 960 | 960 |
| Recoverable taxes from Brazilian government entities | 7,676 | 3,005 |
| Right-of-use assets under financing leases, net (Note 2) | 12,863 | — |
| Right-of-use assets under operating leases, net (Note 2) | 13,203 | — |
| Other assets | 9,705 | 7,958 |
| Total assets | $ 160,966 | $ 127,925 |
| **Liabilities, Mezzanine Equity and Stockholders' Deficit** | | |
| Current liabilities: | | |
| Accounts payable | $ 51,234 | $ 26,844 |
| Accrued and other current liabilities | 36,655 | 28,979 |
| Financing lease liabilities (Note 2) | 3,465 | — |
| Operating lease liabilities (Note 2) | 4,625 | — |
| Contract liabilities | 1,353 | 8,236 |
| Debt, current portion (includes instrument measured at fair value of $24,392 and $57,918, respectively) | 45,313 | 124,010 |
| Related party debt, current portion | 18,492 | 23,667 |
| Total current liabilities | 161,137 | 211,736 |
| Long-term debt, net of current portion (includes instrument measured at fair value of $26,232 and $0, respectively) | 48,452 | 43,331 |
| Related party debt, net of current portion | 149,515 | 18,689 |
| Financing lease liabilities, net of current portion (Note 2) | 4,166 | — |
| Operating lease liabilities, net of current portion (Note 2) | 15,037 | — |
| Derivative liabilities | 9,803 | 42,796 |
| Other noncurrent liabilities | 23,024 | 23,192 |
| Total liabilities | 411,134 | 339,744 |
| Commitments and contingencies (Note 8) | | |
| Mezzanine equity: | | |
| Contingently redeemable common stock (Note 5) | 5,000 | 5,000 |
| Stockholders' deficit: | | |
| Preferred stock - $0.0001 par value, 5,000,000 shares authorized as of December 31, 2019 and 2018, and 8,280 and 14,656 shares issued and outstanding as of December 31, 2019 and 2018, respectively | — | — |
| Common stock - $0.0001 par value, 250,000,000 shares authorized as of December 31, 2019 and 2018, respectively; 117,742,677 and 76,564,829 shares issued and outstanding as of December 31, 2019 and 2018, respectively | 12 | 8 |
| Additional paid-in capital | 1,543,668 | 1,346,996 |
| Accumulated other comprehensive loss | (43,804) | (43,343) |
| Accumulated deficit | (1,755,653) | (1,521,417) |
| Total Amyris, Inc. stockholders' deficit | (255,777) | (217,756) |
| Noncontrolling interest | 609 | 937 |
| Total stockholders' deficit | (255,168) | (216,819) |
| Total liabilities, mezzanine equity and stockholders' deficit | $ 160,966 | $ 127,925 |

See accompanying notes to consolidated financial statements.

# AMYRIS, INC.
# CONSOLIDATED STATEMENTS OF OPERATIONS

| Years Ended December 31,<br>(In thousands, except shares and per share amounts) | 2019 | 2018 |
|---|---|---|
| Revenue | | |
| Renewable products (includes related party revenue of $56 and $360, respectively) | $ 59,872 | $ 33,598 |
| Licenses and royalties, net (includes related party revenue of $49,051 and $5,958, respectively) | 54,043 | 7,658 |
| Grants and collaborations (includes related party revenue of $4,120 and $4,735 respectively) | 38,642 | 22,348 |
| Total revenue (includes related party revenue of $53,227 and $11,053, respectively) | 152,557 | 63,604 |
| Cost and operating expenses | | |
| Cost of products sold | 76,185 | 36,698 |
| Research and development | 71,460 | 68,722 |
| Sales, general and administrative | 126,586 | 90,902 |
| Impairment of other assets | 216 | 3,865 |
| Total cost and operating expenses | 274,447 | 200,187 |
| Loss from operations | (121,890) | (136,583) |
| Other income (expense) | | |
| Loss on divestiture | — | (1,778) |
| Interest expense | (58,665) | (42,703) |
| Gain (loss) from change in fair value of derivative instruments | 2,777 | (30,880) |
| (Loss) gain from change in fair value of debt | (19,369) | 2,082 |
| Loss upon extinguishment of debt | (44,208) | (17,424) |
| Other expense, net | (783) | (2,949) |
| Total other expense, net | (120,248) | (93,652) |
| Loss before income taxes | (242,138) | (230,235) |
| Provision for income taxes | (629) | — |
| Net loss attributable to Amyris, Inc. | (242,767) | (230,235) |
| Less deemed dividend to preferred shareholder on issuance and modification of common stock warrants | (34,964) | — |
| Less deemed dividend related to proceeds discount upon conversion of Series D preferred stock | — | (6,852) |
| Add: losses allocated to participating securities | 7,380 | 13,991 |
| Net loss attributable to Amyris, Inc. common stockholders | $ (270,351) | $ (223,096) |
| | | |
| *Denominator:* | | |
| Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, basic | 101,370,632 | 60,405,910 |
| Basic loss per share | $ (2.67) | $ (3.69) |
| | | |
| Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, diluted | 101,296,575 | 60,405,910 |
| Diluted loss per share | $ (2.72) | $ (3.69) |

See accompanying notes to consolidated financial statements.

## AMYRIS, INC.
## CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

| **Years Ended December 31, (In thousands)** | **2019** | **2018** |
|---|---|---|
| Comprehensive loss: | | |
| Net loss attributable to Amyris, Inc. | $ (242,767) | $ (230,235) |
| Foreign currency translation adjustment | (461) | (1,187) |
| Comprehensive loss attributable to Amyris, Inc. | $ (243,228) | $ (231,422) |

See accompanying notes to consolidated financial statements.

# AMYRIS, INC.
## CONSOLIDATED STATEMENTS OF STOCKHOLDERS' DEFICIT AND MEZZANINE EQUITY

| (In thousands, except number of shares) | Preferred Stock | | Common Stock | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Shares | Amount | Shares | Amount | Additional Paid-in Capital | Accumulated Other Comprehensive Loss | Accumulated Deficit | Noncontrolling Interest | Total Stockholders' Deficit | Mezzanine Equity - Common Stock |
| **December 31, 2017** | 22,171 | $ — | 45,637,433 | $ 5 | $ 1,114,546 | $ (42,156) | $ (1,290,420) | $ 937 | $ (217,088) | $ 5,000 |
| Cumulative effect of change in accounting principle for ASC 606 (see "Significant Accounting Policies" in Note 1) | — | — | — | — | — | — | (762) | — | (762) | — |
| Issuance of common stock upon exercise of warrants | — | — | 20,891,038 | 2 | 62,152 | — | — | — | 62,154 | — |
| Settlement of derivatives liability upon exercise of warrants | — | — | — | — | 108,670 | — | — | — | 108,670 | |
| Issuance of common stock in private placement, net of issuance costs of $0 | — | — | 205,168 | — | 1,415 | — | — | — | 1,415 | — |
| Issuance of common stock in private placement - related party, net of issuance costs of $0 | — | — | 1,643,991 | — | 6,050 | — | — | — | 6,050 | — |
| Issuance of common stock upon conversion of preferred stock | (7,515) | — | 1,548,480 | — | — | — | — | — | — | — |
| Deemed dividend on preferred stock discounts upon conversion of Series D preferred stock | — | — | — | — | 6,852 | — | — | — | 6,852 | — |
| Deemed dividend on preferred stock discounts upon conversion of Series D preferred stock | — | — | — | — | (6,852) | — | — | — | (6,852) | — |
| Issuance of common stock upon conversion of convertible notes | — | — | 5,674,926 | 1 | 42,368 | — | — | — | 42,369 | — |
| Issuance of common stock for settlement of debt interest payments | — | — | 238,898 | — | 1,800 | — | — | — | 1,800 | — |
| Issuance of common stock upon exercise of stock options | — | — | 70,807 | — | 288 | — | — | — | 288 | — |
| Issuance of common stock upon ESPP purchase | — | — | 246,230 | — | 777 | — | — | — | 777 | — |
| Issuance of common stock and payment of minimum employee taxes withheld upon net share settlement of restricted stock | — | — | 407,858 | — | (260) | — | — | — | (260) | — |
| Stock-based compensation | — | — | — | — | 9,190 | — | — | — | 9,190 | — |
| Foreign currency translation adjustment | — | — | — | — | — | (1,187) | — | — | (1,187) | — |
| Net loss attributable to Amyris, Inc. | — | — | — | — | — | — | (230,235) | — | (230,235) | — |
| **December 31, 2018** | 14,656 | — | 76,564,829 | $ 8 | $ 1,346,996 | $ (43,343) | $ (1,521,417) | $ 937 | $ (216,819) | $ 5,000 |
| Cumulative effect of change in accounting principle for ASU 2017-11 (see "Significant Accounting Policies" in Note 1) | — | — | — | — | 32,512 | — | 8,531 | — | 41,043 | — |
| Issuance of common stock and warrants upon conversion of debt principal and accrued interest | — | — | 14,107,637 | 2 | 62,859 | — | — | — | 62,861 | — |
| Issuance of common stock in private placement, net of issuance costs - related party | — | — | 10,478,338 | 1 | 39,499 | — | — | — | 39,500 | — |
| Issuance and modification of common stock warrants | — | — | — | — | 34,964 | — | — | — | 34,964 | — |
| Deemed dividend to preferred shareholder on issuance and modification of common stock warrants | — | — | — | — | (34,964) | — | — | — | (34,964) | — |
| Issuance of common stock in private placement | — | — | 3,610,944 | — | 14,221 | — | — | — | 14,221 | — |
| Issuance of warrants in connection with related party debt issuance | — | — | — | — | 20,121 | — | — | — | 20,121 | — |
| Issuance of warrants in connection with related party debt modification | — | — | — | — | 4,932 | — | — | — | 4,932 | — |
| Issuance of warrants in connection with debt accounted for at fair value | — | — | — | — | 5,358 | — | — | — | 5,358 | — |
| Stock-based compensation | — | — | — | — | 12,554 | — | — | — | 12,554 | — |
| Fair value of pre-delivery shares issued to lenders | — | — | 7,500,000 | 1 | 4,214 | — | — | — | 4,215 | — |
| Issuance of common stock upon ESPP purchase | — | — | 318,490 | — | 1,078 | — | — | — | 1,078 | — |
| Fair value of bifurcated embedded conversion feature in connection with debt modification | — | — | — | — | 398 | — | — | — | 398 | — |
| Issuance of common stock upon exercise of stock options | — | — | 3,612 | — | 27 | — | — | — | 27 | — |
| Issuance of common stock upon exercise of warrants | — | — | 2,515,174 | — | 1 | — | — | — | 1 | — |
| Conversion of Series B preferred shares into common shares | (6,376) | — | 1,012,071 | — | — | — | — | — | — | — |
| Distribution to non-controlling interests | — | — | — | — | — | — | — | (328) | (328) | — |
| Foreign currency translation adjustment | — | — | — | — | — | (461) | — | — | (461) | — |
| Issuance of common stock and payment of minimum employee taxes withheld upon net share settlement of restricted stock | — | — | 1,631,582 | — | (1,102) | — | — | — | (1,102) | — |
| Net loss attributable to Amyris, Inc. | — | — | — | — | — | — | (242,767) | — | (242,767) | — |
| **Balance as of December 31, 2019** | 8,280 | — | 117,742,677 | $ 12 | $ 1,543,668 | $ (43,804) | $ (1,755,653) | $ 609 | $ (255,168) | $ 5,000 |

See accompanying notes to consolidated financial statements.

## AMYRIS, INC.
## CONSOLIDATED STATEMENTS OF CASH FLOWS

| Years Ended December 31, | 2019 | 2018 |
|---|---|---|
| **Operating activities** | | |
| Net loss attributable to Amyris, Inc. | $ (242,767) | $ (230,235) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Loss upon conversion or extinguishment of debt | 44,208 | 17,424 |
| Loss (gain) from change in fair value of debt | 19,369 | (2,082) |
| Amortization of right-of-use assets under operating leases | 12,597 | — |
| Stock-based compensation | 12,554 | 9,190 |
| Accretion of debt discount | 11,665 | 16,602 |
| Expense for warrants issued for covenant waivers | 5,358 | — |
| Depreciation and amortization | 4,581 | 4,921 |
| Impairment of property, plant and equipment | 1,354 | — |
| Loss in equity-method investee | 297 | — |
| Loss on disposal of property, plant and equipment | 212 | 941 |
| (Gain) loss from change in fair value of derivative instruments | (2,777) | 30,880 |
| Gain on foreign currency exchange rates | (22) | (2,223) |
| Modification of warrants recorded as legal expense | — | 6,764 |
| Issuance costs on warrant exercises for cash | — | 4,389 |
| Loss on impairment of other assets | 216 | 3,865 |
| Debt issuance costs expensed due to fair value option | — | 3,810 |
| Loss on divestiture | — | 1,778 |
| Changes in assets and liabilities: | | |
| Accounts receivable | (2,818) | 7,448 |
| Contract assets | (8,485) | — |
| Contract assets - related party | 8,021 | 8,056 |
| Inventories | (17,989) | (4,416) |
| Deferred cost of products sold - related party | (13,175) | (3,317) |
| Prepaid expenses and other assets | (8,064) | (6,383) |
| Accounts payable | 23,748 | 11,603 |
| Accrued and other liabilities | 18,981 | 8,461 |
| Lease liabilities | (17,125) | — |
| Contract liabilities | (6,872) | 3,158 |
| Net cash used in operating activities | (156,933) | (109,366) |
| **Investing activities** | | |
| Purchases of property, plant and equipment | (13,080) | (12,472) |
| Net cash used in investing activities | (13,080) | (12,472) |
| **Financing activities** | | |
| Proceeds from issuance of debt, net of issuance costs | 189,175 | 94,371 |
| Proceeds from issuance of common stock in private placements, net of issuance costs - related party | 39,500 | — |
| Proceeds from issuance of common stock in private placements, net of issuance costs | 14,221 | 1,415 |
| Proceeds from ESPP purchases | 1,078 | 777 |
| Proceeds from exercises of common stock options | 27 | 288 |
| Proceeds from exercise of warrants, net of issuance costs | 1 | 57,767 |
| Principal payments on debt | (112,393) | (41,668) |
| Principal payments on financing leases | (5,268) | (981) |
| Payment of minimum employee taxes withheld upon net share settlement of restricted stock units | (1,103) | (260) |
| Capital distribution to noncontrolling interest | (328) | — |
| Debt issuance costs incurred in connection with debt instrument accounted at fair value | — | (3,752) |
| Net cash provided by financing activities | 124,910 | 107,957 |
| Effect of exchange rate changes on cash, cash equivalents and restricted cash | (252) | (77) |
| Net decrease in cash, cash equivalents and restricted cash | (45,355) | (13,958) |
| Cash, cash equivalents and restricted cash at beginning of year | 47,054 | 61,012 |
| Cash, cash equivalents and restricted cash at end of year | $ 1,699 | $ 47,054 |

| **Reconciliation of cash, cash equivalents and restricted cash to the consolidated balance sheets** | | |
|---|---|---|
| Cash and cash equivalents | $ 270 | $ 45,353 |
| Restricted cash, current | 469 | 741 |
| Restricted cash, noncurrent | 960 | 960 |
| Total cash, cash equivalents and restricted cash | $ 1,699 | $ 47,054 |

## Amyris, Inc.
## CONSOLIDATED STATEMENTS OF CASH FLOWS, Continued

| Years Ended December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| **Supplemental disclosures of cash flow information:** | | |
| Cash paid for interest | $ 20,780 | $ 18,524 |
| **Supplemental disclosures of non-cash investing and financing activities:** | | |
| Cumulative effect of change in accounting principle for ASU 2017-11 (Note 2) | $ 41,043 | $ — |
| Lease liabilities recorded upon adoption of ASC 842 (Note 2) | $ 33,552 | $ — |
| Right-of-use assets under operating leases recorded upon adoption of ASC 842 (Note 2) | $ 29,713 | $ — |
| Cumulative effect adjustment of ASC 606 | $ — | $ 762 |
| Accrued interest added to debt principal | $ 7,292 | $ 3,664 |
| Acquisition of additional interest in equity-method investee in exchange for payment obligation | $ 5,031 | $ — |
| Acquisition of property, plant and equipment under accounts payable, accrued liabilities and notes payable | $ 2,576 | $ — |
| Acquisition of right-of-use assets under operating leases | $ 3,551 | $ — |
| Debt fair value adjustment in connection with debt issuance | $ 11,575 | $ — |
| Derecognition of derivative liabilities upon exercise of warrants | $ — | $ 108,670 |
| Fair value of embedded features in connection with debt issuances and modifications | $ 237 | $ — |
| Fair value of embedded features in connection with debt issuances and modifications - related party | $ 1,954 | $ — |
| Fair value of pre-delivery shares in connection with debt issuance | $ 4,215 | $ — |
| Fair value of warrants recorded as debt discount in connection with debt issuances | $ 8,965 | $ — |
| Fair value of warrants recorded as debt discount in connection with debt issuances - related party | $ 16,155 | $ — |
| Fair value of warrants recorded as debt discount in connection with debt modification | $ 398 | $ — |
| Fair value of warrants recorded as debt discount in connection with debt modification - related party | $ 2,050 | $ — |
| Financing of equipment under financing leases | $ 7,436 | $ 271 |
| Financing of insurance premium under note payable | $ 253 | $ 495 |
| Issuance of common stock - related party | $ — | $ 6,050 |
| Issuance of common stock for settlement of debt principal and interest payments | $ — | $ 1,800 |
| Issuance of common stock upon conversion of convertible notes | $ 62,860 | $ 24,970 |

See accompanying notes to consolidated financial statements.

## 1. Basis of Presentation and Summary of Significant Accounting Policies

### Business Description

Amyris, Inc. and subsidiaries (collectively, Amyris or the Company) is a leading industrial biotechnology company that applies its technology platform to engineer, manufacture and sell high performance, natural, sustainably-sourced products into the Health & Wellness, Clean Beauty, and Flavor & Fragrance markets. The Company's proven technology platform enables the Company to rapidly engineer microbes and use them as catalysts to metabolize renewable, plant-sourced sugars into large volume, high-value ingredients. The Company's biotechnology platform and industrial fermentation process replace existing complex and expensive manufacturing processes. The Company has successfully used its technology to develop and produce many distinct molecules at commercial volumes.

*Going Concern*

The Company has incurred significant operating losses since its inception and expects to continue to incur losses and negative cash flows from operations for at least the next 12 months following the issuance of the financial statements. As of December 31, 2019, the Company had negative working capital of $86.7 million and an accumulated deficit of $1.8 billion.

As of December 31, 2019, the Company's debt (including related party debt), net of deferred discount and issuance costs of $20.3 million and a fair value adjustment of $15.4 million, totaled $261.8 million, of which $63.8 million is classified as current. However, $75.0 million of debt was converted into equity in January 2020; see Note 15, "Subsequent Events" for more information. The Company's debt agreements contain various covenants, including certain restrictions on the Company's business that could cause the Company to be at risk of defaults, such as restrictions on additional indebtedness, material adverse effect and cross default provisions. A failure to comply with the covenants and other provisions of the Company's debt instruments, including any failure to make a payment when required, would generally result in events of default under such instruments, which could permit acceleration of a substantial portion of such indebtedness. If such indebtedness is accelerated, it would generally also constitute an event of default under the Company's other outstanding indebtedness, permitting acceleration of a substantial portion of such other outstanding indebtedness. At December 31, 2019, the Company failed to meet certain covenants under several credit arrangements (which are discussed in Note 4, "Debt"), including those associated with cross-default provisions, minimum liquidity and minimum asset coverage requirements. In March 2020, these lenders provided permanent waivers to the Company for breaches of all past covenant violations and cross-default payment failures (discussed below), through March 13, 2020 under the respective credit agreements, and significantly reduced the minimum liquidity requirement and substantially increased the base of eligible assets to calculate the asset coverage requirement..

On January 31, 2020, the Company failed to pay Total Raffinage Chimie (Total), Nikko Chemicals Co. Ltd (Nikko) and certain affiliates of the Schottenfeld Group LLC (Schottenfeld) an aggregate of $17.6 million of maturing promissory notes, and previously on December 15, 2019 failed to pay Ginkgo $5.2 million of past due interest, past due partnership payments and the first installment of a waiver fee. These failures resulted in an event of default under the respective agreements and also triggered cross-defaults under other debt instruments (discussed above) that permitted each of the affected cross-default debt holders of such indebtedness to accelerate the amounts owing under such instruments. The Company subsequently received waivers from each of the affected cross-default debt holders to waive the right to accelerate due to the event specific cross-defaults. As a result, the indebtedness with respect to which the Company has obtained such waivers continues to be classified as long-term on the Company's balance sheet. The indebtedness reflected by the Total and certain Ginkgo, Nikko and Schottenfeld amounts continues to be classified as a current liability on the Company's balance sheet as the due date for these amounts was within one year of December 31, 2019.

Subsequent to December 31, 2019, the Company (i) obtained a waiver and forbearance agreement from Schottenfeld, (ii) amended the credit arrangements with Total and Nikko Notes to extend the maturity date of the original promissory notes, and (iii) entered into a waiver and amendment to the partnership agreement with Ginkgo to waive all past payment defaults under the Ginkgo Note and Ginkgo Partnership Agreement, and to extend the payment due date and modify the periodic partnership payment timing and amount. See Note 15, "Subsequent Events" for further information.

Although the Company obtained extensions to make these payments, it currently does not have sufficient funds to repay the amounts due under the Total, Nikko, Schottenfeld and Ginkgo credit arrangements, and while the Company intends to seek equity or debt financing, the proceeds of which would be used to repay Total, Nikko, Schottenfeld and Ginkgo, there can be no assurance that the Company will be able to obtain such financing on our expected timeline, or on acceptable terms, if at all.

Also, while the Company has been able to cure these defaults to date to avoid additional cross-acceleration, it may not be able to cure such a default promptly in the future.

Further, cash and cash equivalents of $0.3 million as of December 31, 2019 are not sufficient to fund expected future negative cash flows from operations and cash debt service obligations through March 2021. These factors raise substantial doubt about the Company’s ability to continue as a going concern within one year after the date that these financial statements are issued. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. In addition to repaying the Total, Nikko, Schottenfeld and Ginkgo amounts previously discussed, the Company's ability to continue as a going concern will depend, in large part, on its ability to raise additional proceeds through financings, achieve positive cash flows from operations during the 12 months from the date of this filing, and refinance or extend other existing debt maturities occurring later in 2020, all of which are uncertain and outside the control of the Company. Further, the Company's operating plan for 2020 contemplates a significant reduction in its net operating cash outflows as compared to the year ended December 31, 2019, resulting from (i) revenue growth from sales of existing and new products with positive gross margins, (ii) reduced production costs as a result of manufacturing and technical developments, (iii) reduced spending in general and administrative areas, and (iv) an increase in cash inflows from collaborations and grants. If the Company is unable to complete these actions, it expects to be unable to meet its operating cash flow needs and its obligations under its existing debt facilities. This could result in an acceleration of its obligation to repay all amounts outstanding under those facilities, and the Company may be forced to obtain additional equity or debt financing, which may not occur timely or on reasonable terms, if at all, and/or liquidate its assets. In such a scenario, the value received for assets in liquidation or dissolution could be significantly lower than the value reflected in these financial statements. The Company has in the past, including in July 2019, had certain of its debt instruments accelerated for failure to make a payment when due. While we have been able to obtain permanent waivers or cure these defaults to date to avoid additional cross-acceleration, we may not be able to obtain waivers or cure such a default promptly in the future.

**Basis of Consolidation**

The accompanying consolidated financial statements have been prepared in accordance with the accounting principles generally accepted in the United States (U.S. GAAP). The consolidated financial statements include the accounts of Amyris, Inc. and its wholly-owned and partially-owned subsidiaries in which the Company has a controlling interest after elimination of all significant intercompany accounts and transactions.

Investments and joint venture arrangements are assessed to determine whether the terms provide economic or other control over the entity requiring consolidation of the entity. Entities controlled by means other than a majority voting interest are referred to as variable-interest entities (VIEs) and are consolidated when Amyris has both the power to direct the activities of the VIE that most significantly impact its economic performance and the obligation to absorb losses or the right to receive benefits that could potentially be significant to the entity. For any investment or joint venture in which (i) the Company does not have a majority ownership interest, (ii) the Company possesses the ability to exert significant influence and (iii) the entity is not a VIE for which the Company is considered the primary beneficiary, the Company accounts for the investment or joint venture using the equity method. Equity investments in which the Company does not exert significant influence and that do not have readily determinable fair values are measured at cost, adjusted for changes from observable market transactions, less impairment (“adjusted cost basis”). The Company evaluates its investments for impairment by considering a variety of factors, including the earnings capacity of the related investments. Fair value measurements for the Company’s equity investments are classified within Level 3 of the fair value hierarchy based on the nature of the fair value inputs. Realized and unrealized gains or losses are recognized in other income or expense.

*Raizen Joint Venture Agreement*

On May 10, 2019, the Company and Raizen Energia S.A. (Raizen) entered into a joint venture agreement relating to the formation and operation of a joint venture relating to the production, sale and commercialization of alternative sweetener products. In connection with the formation of the joint venture, among other things, (i) the joint venture will construct a manufacturing facility on land owned by Raizen and leased to the joint venture (the Sweetener Plant), (ii) the Company will grant to the joint venture an exclusive, royalty-free, worldwide license to certain technology owned by the Company relevant to the joint venture’s business, and (iii) the Company and Raizen will enter into a shareholders agreement setting forth the rights and obligations of the parties with respect to, and the management of, the joint venture. The formation of the joint venture is subject to certain conditions, including certain regulatory approvals and the achievement of certain technological and economic milestones relating to the Company’s existing production of its alternative sweetener product. If such conditions are not satisfied by May 2020, the joint venture will automatically terminate. However, the termination date can be extended by mutual agreement of the parties. In addition, notwithstanding the satisfaction of the closing conditions, Raizen may elect not to

consummate the formation and operation of the joint venture, in which event, the Company will retain the right to construct and operate the Sweetener Plant.

Upon the closing of the joint venture, each party will make an initial capital contribution to the joint venture of 2.5 million Brazilian Real (R$2.5 million) and the joint venture will be owned 50% by the Company and 50% by Raizen. Within 60 days of the formation, the parties will make an aggregate cash contribution to the joint venture of USD $9.0 million to purchase certain fixed assets currently owned by the Company and located at the site of the Company's former joint venture with Sao Martinho S.A. in Pradopolis, Brazil for USD $3.0 million, as well as to pay for costs related to the removal and transportation of such assets to the site of the Sweetener Plant. In addition, within six months of the formation, the Company will contribute to the joint venture its existing supply agreements related to its alternative sweetener product, subject to certain exceptions, in exchange for shares of dividend-bearing preferred stock in the joint venture, which will be entitled, for a period of 10 years commencing from the initial date of operation of the Sweetener Plant, to certain priority fixed cumulative dividends including, in the event that certain technological and economic milestones are met in any fiscal quarter, a percentage of the operating cash flow of the joint venture in such quarter.

The Company is evaluating the accounting treatment for its future interest in the joint venture under ASC 810, Consolidations and ASC 323, Equity Method and Joint Ventures and will conclude once the corporate governance and economic participation structure is finalized and the formation of the joint venture is consummated.

**Use of Estimates and Judgements**

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates, judgements and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates, and such differences may be material to the consolidated financial statements. Significant estimates and judgements used in these consolidated financial statements are discussed in the relevant accounting policies below or specifically discussed in the Notes to Consolidated Financial Statements where such transactions are disclosed.

**Significant Accounting Policies**

***Cash and Cash Equivalents***

The Company considers all highly liquid investments purchased with an original or remaining maturity of three months or less at the date of purchase to be cash equivalents. Cash and cash equivalents are maintained with various financial institutions.

***Inventories***

Inventories, which consist of farnesene-derived products, flavors and fragrances ingredients and clean beauty products, are stated at the lower of actual cost or net realizable value and are categorized as finished goods, work in process or raw material inventories. The Company evaluates the recoverability of its inventories based on assumptions about expected demand and net realizable value. If the Company determines that the cost of inventories exceeds their estimated net realizable value, the Company records a write-down equal to the difference between the cost of inventories and the estimated net realizable value. If actual net realizable values are less favorable than those projected by management, additional inventory write-downs may be required that could negatively impact the Company's operating results. If actual net realizable values are more favorable, the Company may have favorable operating results when products that have been previously written down are sold in the normal course of business. The Company also evaluates the terms of its agreements with its suppliers and establishes accruals for estimated losses on adverse purchase commitments as necessary, applying the same lower of cost or net realizable value approach that is used to value inventory. Cost for farnesene-derived products and flavors and fragrances ingredients are computed on a weighted-average basis. Cost for clean beauty products are computed on a standard cost basis.

***Property, Plant and Equipment, Net***

Property, plant and equipment are recorded at cost. Depreciation and amortization are computed straight-line based on the estimated useful lives of the related assets, ranging from 3 to 15 years for machinery, equipment and fixtures, and 15 years for buildings. Leasehold improvements are amortized over their estimated useful lives or the period of the related lease, whichever is shorter.

The Company expenses costs for maintenance and repairs and capitalizes major replacements, renewals and betterments. For assets retired or otherwise disposed, both cost and accumulated depreciation are eliminated from the asset and accumulated depreciation accounts, and gains or losses related to the disposal are recorded in the statement of operations for the period.

***Impairment***

Long-lived assets that are held and used by the Company are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Determination of recoverability of long-lived assets is based on an estimate of the undiscounted future cash flows resulting from the use of the asset and its eventual disposition. Measurement of an impairment loss for long-lived assets that management expects to hold and use is based on the difference between the fair value of the asset and its carrying value. Long-lived assets to be disposed of are reported at the lower of carrying amount or fair value less costs to sell.

***Recoverable Taxes from Brazilian Government Entities***

Recoverable taxes from Brazilian government entities represent value-added taxes paid on purchases in Brazil, which are reclaimable from the Brazilian tax authorities, net of reserves for amounts estimated not to be recoverable.

***Fair Value Measurements***

The carrying amounts of certain financial instruments, such as cash equivalents, short-term investments, accounts receivable, accounts payable and accrued liabilities, approximate fair value due to their relatively short maturities.

The Company measures the following financial assets and liabilities at fair value:

- Freestanding and bifurcated derivatives in connection with certain debt and equity financings; and
- Senior Convertible Notes Due 2022 and 6% Convertible Notes Due 2021 (see Note 3, "Fair Value Measurement" and Note 4, "Debt", for which the Company elected fair value accounting.

Fair value is based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. Where available, fair value is based on or derived from observable market prices or other observable inputs. Where observable prices or inputs are not available, valuation techniques are applied. These valuation techniques involve some level of management estimation and judgement, the degree of which is dependent on the price transparency for the instruments or market and the instruments' complexity.

Changes to the inputs used in these valuation models can have a significant impact on the estimated fair value of the Senior Convertible Notes Due 2022, 6% Convertible Notes Due 2021 and the Company's embedded and freestanding derivatives. For example, a decrease (increase) in the estimated credit spread for the Company results in an increase (decrease) in estimated fair value. Conversely, a decrease (increase) in the stock price results in a decrease (increase) in estimated fair value.

The changes during 2019 and 2018 in the fair values of the bifurcated compound embedded derivatives are primarily related to the change in price of the Company's common stock and are reflected in the consolidated statements of operations as "Gain (loss) from change in fair value of derivative instruments".

For debt instruments for which the Company has not elected fair value accounting, fair value is based on the present value of expected future cash flows and assumptions about the then-current market interest rates as of the reporting period and the creditworthiness of the Company. Most of the Company's debt is carried on the consolidated balance sheet on a historical cost basis net of unamortized discounts and premiums, because the Company has not elected the fair value option of accounting. However, for the Senior Convertible Notes Due 2022 and the 6% Notes Due 2021, the Company elected fair value accounting, so that balances reported for those debt instruments represent fair value as of the applicable balance sheet date; see Note 3, "Fair Value Measurement", for additional information. Changes in fair value of the Senior Convertible Notes Due 2022 and the 6% Convertible Notes Due 2021 are reflected in the consolidated statements of operations as "Gain (loss) from change in fair value of debt".

For all debt instruments, including any for which the Company has elected fair value accounting, the Company classifies interest that has been accrued during each period as Interest expense on the consolidated statements of operations.

***Derivatives***

Embedded derivatives that are required to be bifurcated from the underlying debt instrument (i.e., host) are accounted for and valued as separate financial instruments. The Company has evaluated the terms and features of its convertible notes payable and convertible preferred stock and identified compound embedded derivatives requiring bifurcation and accounting at fair value, using the valuation techniques mentioned in the *Fair Value Measurements* section of this Note, because the economic and contractual characteristics of the embedded derivatives met the criteria for bifurcation and separate accounting due to the instruments containing conversion options, certain "make-whole interest" provisions, down-round conversion price adjustment provisions and/or conversion rate adjustments, and mandatory redemption features that are not clearly and closely related to the debt host instrument.

Prior to the adoption of ASU 2017-11, certain previously issued warrants with a fair value of $41 million issued in conjunction with the convertible debt and equity financings were freestanding financial instruments and classified as derivative liabilities as of December 31, 2019. Upon adoption of ASU 2017-11 on January 1, 2019, these freestanding instruments met the criteria to be accounted for within equity and the $41 million derivative liability balance was reclassified to stockholders' equity.

During the third and fourth quarter of 2019, the Company issued warrants in connection with a debt financing that met the criteria of a freestanding instrument but did not qualify for equity accounting treatment. As a result, these warrants are accounting for at fair value until settled and are classified as derivative liabilities at December 31, 2019. See Note 6 "Stockholders' Deficit" for further information.

***Noncontrolling Interest***

Noncontrolling interests represent the portion of net income (loss), net assets and comprehensive income (loss) that is not allocable to the Company, in situations where the Company consolidates its equity investment in a joint venture for which there are other owners. The amount of noncontrolling interest is comprised of the amount of such interests at the date of the Company's original acquisition of an equity interest in a joint venture, plus the other shareholders' share of changes in equity since the date the Company made an investment in the joint venture.

***Concentration of Credit Risk***

Financial instruments that potentially subject the Company to a concentration of credit risk consist primarily of cash and cash equivalents, short-term investments and accounts receivable. The Company places its cash equivalents and investments (primarily certificates of deposits) with high credit quality financial institutions and, by policy, limits the amount of credit exposure with any one financial institution. Deposits held with banks may exceed the amount of insurance provided on such deposits. The Company has not experienced any losses on its deposits of cash and cash equivalents and short-term investments.

The Company performs ongoing credit evaluation of its customers, does not require collateral, and maintains allowances for potential credit losses on customer accounts when deemed necessary.

Customers representing 10% or greater of accounts receivable were as follows:

| As of December 31, | 2019 | 2018 |
|---|---|---|
| Customer A (related party) | 19% | ** |
| Customer B | 21% | 24% |
| Customer C | ** | 19% |
| Customer E | ** | 11% |
| Customer F | 10% | ** |

** Less than 10%

Customers representing 10% or greater of revenue were as follows:

| Years Ended December 31, | Year First Customer | 2019 | 2018 |
|---|---|---|---|
| Customer A (related party) | 2017 | 35% | 17% |
| Customer B | 2014 | 10% | 18% |
| Customer C | 2014 | ** | 13% |
| Customer D | 2014 | ** | 13% |
| Customer G | 2019 | 12% | * |

* Not a customer
** Less than 10%

***Revenue Recognition***

The Company recognizes revenue from the sale of renewable products, licenses of and royalties from intellectual property, and grants and collaborative research and development services. Revenue is measured based on the consideration specified in a contract with a customer, and transaction price is allocated utilizing stand-alone selling price. Revenue is recognized when, or as, the Company satisfies a performance obligation by transferring control over a product or service to a customer. The Company generally does not incur costs to obtain new contracts. The costs to fulfill a contract are expensed as incurred.

The Company accounts for a contract when it has approval and commitment to perform from both parties, the rights of the parties are identified, payment terms are established, the contract has commercial substance and collectability of the consideration is probable. Changes to contracts are assessed for whether they represent a modification or should be accounted for as a new contract. The Company considers the following indicators, among others, when determining if it is acting as a principal in the transaction and recording revenue on a gross basis: (i) the Company is primarily responsible for fulfilling the promise to provide the specified goods or service, (ii) the Company has inventory risk before the specified good or service has been transferred to a customer or after transfer of control to the customer and (iii) the Company has discretion in establishing the price for the specified good or service. If a transaction does not meet the Company's indicators of being a principal in the transaction, then the Company is acting as an agent in the transaction and the associated revenues are recognized on a net basis.

The Company's significant contracts and contractual terms with its customers are presented in Note 9, "Revenue Recognition".

The Company recognizes revenue when control has passed to the customer. The following indicators are evaluated in determining when control has passed to the customer: (i) the Company has a right to receive payment for the product or service, (ii) the customer has legal title to the product, (iii) the Company has transferred physical possession of the product to the customer, (iv) the customer has the significant risk and rewards of ownership of the product and (v) the customer has accepted the product. For most of the Company's renewable products customers, supply agreements between the Company and each customer indicate when transfer of title occurs.

In some cases, the Company may make a payment to a customer. When that occurs, the Company evaluates whether the payment is for a distinct good or service receivable from the customer. If the fair value of the goods or services receivable is greater than or equal to the amount paid to the customer, then the entire payment is treated as a purchase. If, on the other hand, the fair value of goods or services is less than the amount paid, then the difference is treated as a reduction in transaction price of the Company's sales to the customer or a reduction of cumulative to-date revenue recognized from the customer in the period the payment is made or goods or services are received from the customer.

*Performance Obligations*

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The Company's contracts may contain multiple performance obligations if a promise to transfer the individual goods or services is separately identifiable from other promises in the contracts and, therefore, is considered distinct. For contracts with multiple performance obligations, the Company determines the standalone selling price of each performance obligation and allocates the total transaction price using the relative selling price basis.

The following is a description of the principal goods and services from which the Company generates revenue.

*Renewable Product Sales*

Revenues from renewable product sales are recognized as a distinct performance obligation on a gross basis as the Company is acting as a principal in these transactions, with the selling price to the customer recorded net of discounts and allowances. Revenues are recognized at a point in time when control has passed to the customer, which typically is upon the renewable products leaving the Company's facilities with the first transportation carrier. The Company, on occasion, may recognize revenue under a bill and hold arrangement, whereby the customer requests and agrees to purchase product but requests delivery at a later date. Under these arrangements, control transfers to the customer when the product is ready for delivery, which occurs when the product is identified separately as belonging to the customer, the product is ready for shipment to the customer in its current form, and the Company does not have the ability to direct the product to a different customer. It is at this point that the Company has the right to receive payment, the customer obtains legal title, and the customer has the significant risks and rewards of ownership. The Company's renewable product sales do not include rights of return, except for direct-to-consumer products, for which the Company estimates sales returns subsequent to sale and reduces revenue accordingly. For renewable products other than direct-to-consumer, returns are accepted only if the product does not meet product specifications and such nonconformity is communicated to the Company within a set number of days of delivery. The Company offers a two-year assurance-type warranty to replace squalane products that do not meet Company-established criteria as set forth in the Company's trade terms. An estimate of the cost to replace the squalane products sold is made based on a historical rate of experience and recognized as a liability and related expense when the renewable product sale is consummated.

*Licenses and Royalties*

*Licensing of Intellectual Property:* When the Company's intellectual property licenses are determined to be distinct from the other performance obligations identified in the arrangement, revenue is recognized from non-refundable, up-front fees allocated to the license at a point in time when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For intellectual property licenses that are combined with other promises, the Company utilizes judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front-fees. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognized.

*Royalties from Licensing of Intellectual Property:* The Company earns royalties from the licensing of its intellectual property whereby the licensee uses the intellectual property to produce and sell its products to its customers and the Company shares in the profits.

When the Company's intellectual property license is the only performance obligation, or it is the predominant performance obligation in arrangements with multiple performance obligations, the Company applies the sales-based royalty exception which requires the Company to estimate the revenue that is recognized at a point in time when the licensee's product sales occur. Estimates of sales-based royalty revenues are made using the most likely outcome method, which is the single amount in a range of possible amounts, using the best evidence available at the time, derived from the licensee's historical sales volumes and sales prices of its products and recent commodity market pricing data and trends. Estimates are adjusted to actual or as new information becomes available.

When the Company's intellectual property license is not the predominant performance obligation in arrangements with multiple performance obligations, the royalty represents variable consideration and is allocated to the transaction price of the predominant performance obligation which generally is the supply of renewable products to the Company's customers. Revenue is estimated and recognized at a point in time when the renewable products are delivered to the customer. Estimates of the amount of variable consideration to include in the transaction price are made using the expected value method, which is the sum of probability-weighted amounts in a range of possible amounts determined based on the cost to produce the renewable product plus a reasonable margin for the profit share. The Company only includes an amount of variable consideration in the transaction price to the extent it is probable that a significant reversal in the cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Also, the transaction price is reduced for estimates of customer incentive payments payable by the Company for certain customer contracts.

*Grants and Collaborative Research and Development Services*

*Collaborative Research and Development Services:* The Company earns revenues from collaboration agreements with customers to perform research and development services to develop new molecules using the Company's technology and to

scale production of the molecules for commercialization and use in the collaborator's products. The collaboration agreements generally include providing the Company's collaboration partners with research and development services and with licenses to the Company's intellectual property to use the technology underlying the development of the molecules and to sell its products that incorporate the technology. The terms of the Company's collaboration agreements typically include one or more of the following: advance payments for the research and development services that will be performed, nonrefundable upfront license payments, milestone payments to be received upon the achievement of the milestone events defined in the agreements, and royalty payments upon the commercialization of the molecules in which the Company shares in the customer's profits.

Collaboration agreements are evaluated at inception to determine whether the intellectual property licenses represent distinct performance obligations separate from the research and development services. If the licenses are determined to be distinct, the non-refundable upfront license fee is recognized as revenue at a point in time when the license is transferred to the licensee and the licensee is able to use and benefit from the license while the research and development service fees are recognized over time as the performance obligations are satisfied. The research and development service fees represent variable consideration. Estimates of the amount of variable consideration to include in the transaction price are made using the expected value method, which is the sum of probability-weighted amounts in a range of possible amounts. The Company only includes an amount of variable consideration in the transaction price to the extent it is probable that a significant reversal in the cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Revenue is recognized over time using either an input-based measure of labor hours expended or a time-based measure of progress towards the satisfaction of the performance obligations. The measure of progress is evaluated each reporting period and, if necessary, adjustments are made to the measure of progress and the related revenue recognized.

Collaboration agreements that include milestone payments are evaluated at inception to determine whether the milestone events are considered probable of achievement, and estimates are made of the amount of the milestone payments to include in the transaction price using the most likely amount method which is the single amount in a range of possible amounts. If it is probable that a significant revenue reversal will not occur, the estimated milestone payment amount is included in the transaction price. Each reporting period, the Company re-evaluates the probability of achievement of the milestone events and any related constraint and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative basis, which would affect collaboration revenues in the period of adjustment. Generally, revenue is recognized using an input-based measure of progress towards the satisfaction of the performance obligations which can be labor hours expended or time-based in proportion to the estimated total project effort or total projected time to complete. The measure of progress is evaluated each reporting period and, if necessary, adjustments are made to the measure of progress and the related revenue recognized. Certain performance obligations are associated with milestones agreed between the Company and its customer. Revenue generated from the performance of services in accordance with these milestones is recognized upon confirmation from the customer that the milestone has been achieved. In these cases, amounts recognized are constrained to the amount of consideration received upon achievement of the milestone.

The Company generally invoices its collaboration partners on a monthly or quarterly basis, or upon the completion of the effort or achievement of a milestone, based on the terms of each agreement. Contract liabilities arise from amounts received in advance of performing the research and development activities and are recognized as revenue in future periods as the performance obligations are satisfied.

*Grants:* The Company earns revenues from grants with government agencies to, among other things, provide research and development services to develop molecules using the Company's technology, and create research and development tools to improve the timeline and predictability for scaling molecules from proof of concept to market by reducing time and costs. Grants typically consist of research and development milestone payments to be received upon the achievement of the milestone events defined in the agreements.

The milestone payments are evaluated at inception to determine whether the milestone events are considered probable of achievement and estimates are made of the amount of the milestone payments to include in the transaction price using the most likely amount method which is the single amount in a range of possible amounts. If it is probable that a significant revenue reversal will not occur, the estimated milestone payment amount is included in the transaction price. Each reporting period, the Company re-evaluates the probability of achievement of the milestone events and any related constraint and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative basis, which would affect grant revenues in the period of adjustment. Revenue is recognized over time using a time-based measure of progress towards the satisfaction of the performance obligations. The measure of progress is evaluated each reporting period and, if necessary, adjustments are made to the measure of progress and the related revenue recognized.

The Company receives certain consideration from AICEP Portugal Global (AICEP), and entity funded by government of Portugal, under the Consortium Internal Regulatory Agreement and an AICEP Investment Contract (the "Agreements") entered

into by Amyris (the "Company") with Universidade Católica Portuguesa (UCP) Porto Campus. The Company considered this arrangement to be a government grant and accounts for the arrangement under International Accounting Standard 20 "Accounting for Government Grants and Disclosure of Government Assistance". Grant revenue is recognized when there is reasonable assurance that monies will be received and that conditions attached to the grant have been met.

***Cost of Products Sold***

Cost of products sold includes the production costs of renewable products, which include the cost of raw materials, in-house manufacturing labor and overhead, amounts paid to contract manufacturers, including amortization of tolling fees, and period costs including inventory write-downs resulting from applying lower of cost or net realizable value inventory adjustments. Cost of products sold also includes certain costs related to the scale-up of production. Shipping and handling costs charged to customers are recorded as revenues. Outbound shipping costs incurred are included in cost of products sold. Such charges were not material for any of the periods presented.

The Company recognizes deferred cost of products sold as an asset on the balance sheet when a cost is incurred in connection with a revenue performance obligation that will not be fulfilled until a future period. The Company also recorded a deferred cost of products asset in 2018 and 2019 for the fair value of amounts paid to DSM under a supply agreement for manufacturing capacity to produce its sweetener product at the Brotas facility in Brazil. The deferred cost of products sold asset is expensed to cost of products sold on a units of production basis over the five-year term of the supply agreement. On a quarterly basis, the Company evaluates its future production volumes for its sweetener product and adjusts the unit cost to be expensed over the remaining estimated production volume. The Company also periodically evaluates the asset for recoverability based on changes business strategy and product demand trends over the term of the supply agreement.

***Research and Development***

Research and development costs are expensed as incurred and include costs associated with research performed pursuant to collaborative agreements and government grants, including internal research. Research and development costs consist of direct and indirect internal costs related to specific projects, as well as fees paid to others that conduct certain research activities on the Company's behalf.

***Debt Extinguishment***

The Company accounts for the income or loss from extinguishment of debt in accordance with ASC 470, *Debt,* which indicates that for all extinguishments of debt, including instances where the terms of a debt instrument are modified in a manner that significantly changes the underlying cash flows, the difference between the reacquisition consideration and the net carrying amount of the debt being extinguished should be recognized as gain or loss when the debt is extinguished. Losses from debt extinguishment are shown in the consolidated statements of operations under "Other income (expense)" as "Loss upon extinguishment of debt".

***Stock-based Compensation***

The Company accounts for stock-based employee compensation plans under the fair value recognition and measurement provisions of U.S. GAAP. Those provisions require all stock-based payments to employees, including grants of stock options and restricted stock units (RSUs), to be measured using the grant-date fair value of each award. The Company recognizes stock-based compensation expense net of expected forfeitures over each award's requisite service period, which is generally the vesting term. Expected forfeiture rates are estimated based on the Company's historical experience. Stock-based compensation plans are described more fully in Note 11, "Stock-based Compensation".

***Income Taxes***

The Company is subject to income taxes in the United States and foreign jurisdictions and uses estimates to determine its provisions for income taxes. The Company uses the asset and liability method of accounting for income taxes, whereby deferred tax asset or liability account balances are calculated at the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect taxable income.

Recognition of deferred tax assets is appropriate when realization of such assets is more likely than not. The Company recognizes a valuation allowance against its net deferred tax assets unless it is more likely than not that such deferred tax assets will be realized. This assessment requires judgement as to the likelihood and amounts of future taxable income by tax jurisdiction.

The Company applies the provisions of Financial Accounting Standards Board (FASB) guidance on accounting for uncertainty in income taxes. The Company assesses all material positions taken in any income tax return, including all significant uncertain positions, in all tax years that are still subject to assessment or challenge by relevant taxing authorities. Assessing an uncertain tax position begins with the initial determination of the position's sustainability, and the tax benefit to be recognized is measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon ultimate settlement. As of each balance sheet date, unresolved uncertain tax positions must be reassessed, and the Company will determine whether (i) the factors underlying the sustainability assertion have changed and (ii) the amount of the recognized tax benefit is still appropriate. The recognition and measurement of tax benefits requires significant judgement, and such judgements may change as new information becomes available.

***Foreign Currency Translation***

The assets and liabilities of foreign subsidiaries, where the local currency is the functional currency, are translated from their respective functional currencies into U.S. dollars at the rates in effect at each balance sheet date, and revenue and expense amounts are translated at average rates during each period, with resulting foreign currency translation adjustments recorded in other comprehensive loss, net of tax, in the consolidated statements of stockholders' deficit. As of December 31, 2019 and 2018, cumulative translation adjustment, net of tax, were $43.8 million and $43.3 million, respectively.

Where the U.S. dollar is the functional currency, remeasurement adjustments are recorded in other income (expense), net in the accompanying consolidated statements of operations. Net losses resulting from foreign exchange transactions were $0.2 million and $1.6 million for the years ended December 31, 2019 and 2018, respectively and are recorded in other income (expense), net in the consolidated statements of operations.

**New Accounting Standards or Updates Recently Adopted**

During the year ended December 31, 2019 the Company adopted the following Accounting Standards Updates (ASUs):

<u>Leases</u> In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* (ASU 2016-02). The standard requires the recognition of lease liabilities and right-of-use (ROU) assets on the balance sheet arising from lease transactions at the lease commencement date and the disclosure of key information about leasing arrangements. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which provided entities the option to use the effective date as the date of initial application on transition to the new guidance. The Company elected this transition method, and as a result, the Company did not adjust comparative information for prior periods. The Company elected certain additional practical expedients permitted by the new guidance allowing the Company to carry forward historical accounting related to lease identification and classification for existing leases upon adoption.

The Company adopted this standard on January 1, 2019 using the modified retrospective approach and elected the package of practical expedients permitted under transition guidance, which allowed the Company to carry forward its historical assessments of: (1) whether contracts are or contain leases, (2) lease classification and (3) initial direct costs, where applicable. The Company did not elect the practical expedient allowing the use-of-hindsight which would require the Company to reassess the lease term of its leases based on all facts and circumstances through the effective date and did not elect the practical expedient pertaining to land easements as this is not applicable to the Company's current contracts. The Company elected the post-transition practical expedient to not separate lease components from non-lease components for all leases of manufacturing equipment. The Company also elected a policy of not recording leases on its condensed consolidated balance sheets when the leases have a term of 12 months or less and the Company is not reasonably certain to elect an option to purchase the leased asset.

The Company's adoption of this standard had the effect of increasing assets and liabilities by $25.7 million, after considering prepaid and other current and noncurrent assets previously recorded on the condensed consolidated balance sheet but did not have a material impact on the condensed consolidated statements of operations or cash flows. The most significant impact relates to (1) the recognition of new ROU assets and lease liabilities on the balance sheet for the Company's operating leases; and (2) providing significant new disclosures about the Company's leasing activities.

Upon adoption, the Company recognized operating lease liabilities of $33.6 million, based on the present value of the remaining minimum rental payments under current leasing standards for existing operating leases. The Company also recognized ROU assets of $29.7 million, which represents the operating lease liability, adjusted for prepaid expenses and deferred rent. The difference between the operating lease ROU assets and lease liabilities reflects the net of advanced rent payments and deferred rent balances that were derecognized at the time of adoption.

*Financial Instruments with "Down Round" Features* In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260); Distinguishing Liabilities from Equity (Topic 480); Derivatives and Hedging (Topic 815): Accounting for Certain Financial Instruments with Down Round Features*. The amendments of this ASU update the classification analysis of certain equity-linked financial instruments, or embedded features, with down round features, as well as clarify existing disclosure requirements for equity-classified instruments. When determining whether certain financial instruments should be classified as liabilities or equity instruments, a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity's own stock. The accounting standard update became effective in the first quarter of fiscal year 2019, and the Company adopted the standard using a modified retrospective approach. Since the adoption of ASU 2017-11 would have classified the warrants effected as equity at inception, the cumulative-effect adjustment should (i) record the issuance date value of the warrants as if they had been equity classified at the issuance date, (ii) reverse the effects of changes in the fair value of the warrants that had been recorded in the statement of operations of each period, and (iii) eliminate the derivative liabilities from the balance sheet. Upon adoption, the Company (i) recorded an increase of $32.5 million to additional paid-in capital, (ii) recorded a decrease to accumulated deficit of $8.5 million and (iii) decreased the warrant liability by $41.0 million.

**Recent Accounting Standards or Updates Not Yet Effective**

*Fair Value Measurement* In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which amends ASC 820, *Fair Value Measurement*. ASU 2018-13 modifies the disclosure requirements for fair value measurements by removing, modifying or adding certain disclosures. The accounting standard update will be effective beginning in the first quarter of fiscal year 2020, with removed and modified disclosures to be adopted on a retrospective basis, and new disclosures to be adopted on a prospective basis. The Company does not believe that the impact of the new standard on its consolidated financial statements will be material.

*Collaborative Revenue Arrangements* In November 2018, the FASB issued ASU 2018-18, *Clarifying the Interaction between Topic 808 and Topic 606*, that clarifies the interaction between the guidance for certain collaborative arrangements and Topic 606, the new revenue recognition standard. A collaborative arrangement is a contractual arrangement under which two or more parties actively participate in a joint operating activity and are exposed to significant risks and rewards that depend on the activity's commercial success. The ASU provides guidance on how to assess whether certain transactions between collaborative arrangement participants should be accounted for within the revenue recognition standard. The accounting standard update will be effective beginning in the first quarter of fiscal year 2020 retroactively. The Company does not believe that the impact of the new standard on its consolidated financial statements will be material.

*Credit Losses* In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326), Measurement of Credit Losses on Financial Instruments*. ASU 2016-13 requires entities to measure all expected credit losses for most financial assets held at the reporting date based on an expected loss model which includes historical experience, current conditions, and reasonable and supportable forecasts. Entities will now use forward-looking information to better form their credit loss estimates. ASU 2016-13 also requires enhanced disclosures to help financial statement users better understand significant estimates and judgments used in estimating credit losses, as well as the credit quality and underwriting standards of an entity's portfolio. ASU 2016-13 will become effective for the Company beginning in the first quarter of fiscal year 2020. The Company does not believe that the impact of the new standard on its consolidated financial statements will be material.

In November 2019, the FASB issued ASU 2019-11, *Codification Improvements to Topic 326, Financial Instruments-Credit Losses*. This ASU clarifies and addresses certain items related to amendments in ASU 2016-13. This new guidance is effective for the Company beginning on January 1, 2020. This new guidance is not expected to have a material impact on the Company's consolidated financial statements.

*Income Taxes* In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which simplifies the accounting for income taxes. This guidance will become effective for the Company in the first quarter of fiscal year 2021 on a prospective basis. The Company is currently evaluating the impact of the new guidance on its consolidated financial statements.

In January 2020, the FASB issued ASU 2020-01, *Investments-Equity Securities (Topic 321), Investments-Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815)-Clarifying the Interactions between Topic 321, Topic 323, and Topic 815*. The guidance provides clarification of the interaction of rules for equity securities, the equity method of accounting and forward contracts and purchase options on certain types of securities. This new guidance is effective for the

Company beginning on January 1, 2021. While the Company is currently assessing the impact of the new guidance, it is not expected to have a material impact on the Company's consolidated financial statements.

## 2. Balance Sheet Details

***Allowance for Doubtful Accounts***

Allowance for doubtful accounts activity and balances were as follows:

| (In thousands) | Balance at Beginning of Year | Provisions | Write-offs, Net | Balance at End of Year |
|---|---|---|---|---|
| Allowance for doubtful accounts: | | | | |
| Year Ended December 31, 2019 | $ 642 | $ 110 | $ (707) | $ 45 |
| Year Ended December 31, 2018 | $ 642 | $ — | $ — | $ 642 |

***Inventories***

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| Raw materials | $ 3,255 | $ 3,901 |
| Work in process | 7,204 | 539 |
| Finished goods | 17,311 | 5,253 |
| Total inventories | $ 27,770 | $ 9,693 |

***Deferred cost of products sold — related party***

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| Deferred cost of products sold - related party | $ 3,677 | $ 489 |
| Deferred cost of products sold, noncurrent - related party | 12,815 | 2,828 |
| Total | $ 16,492 | $ 3,317 |

In November 2018, the Company amended the supply agreement with DSM to secure manufacturing capacity at the Brotas facility for sweetener production through 2022. See Note 9, “Revenue Recognition” for information regarding the November 2018 Supply Agreement Amendment. The supply agreement was included as an element of a combined transaction with DSM, which resulted in a fair value allocation of $24.4 million to the manufacturing capacity fees. See Note 3, “Fair Value Measurement” for information related to this fair value allocation. Of the $24.4 million fair value allocated to the manufacturing capacity fee, $3.3 million was recorded as deferred cost of products sold during 2018. Also, the Company paid an additional $14.1 million in manufacturing capacity fees during 2019, which were recorded as additional deferred cost of products sold. The remaining $7.0 million manufacturing capacity fees will be recorded as deferred cost of products sold in the period the additional payments are made to DSM. The manufacturing capacity deferred cost of products sold asset is expensed to cost of products sold on a units of production basis as the Company's sweetener product is sold over the five-year term of the

supply agreement. During the years ended December 31, 2019 and 2018, the Company expensed $0.9 million and $0, respectively, of the deferred cost of products sold asset.

***Prepaid expenses and other current assets***

| December 31,<br>(In thousands) | 2019 | 2018 |
|---|---|---|
| Non-inventory production supplies | $ 5,376 | $ 2,391 |
| Prepayments, advances and deposits | 4,726 | 5,644 |
| Recoverable taxes from Brazilian government entities | 79 | 631 |
| Other | 2,569 | 1,900 |
| Total prepaid expenses and other current assets | $ 12,750 | $ 10,566 |

***Property, plant and equipment, net***

| December 31,<br>(In thousands) | 2019 | 2018 |
|---|---|---|
| Machinery and equipment | $ 48,041 | $ 43,713 |
| Leasehold improvements | 41,478 | 39,922 |
| Computers and software | 9,822 | 9,987 |
| Furniture and office equipment, vehicles and land | 3,510 | 3,016 |
| Construction in progress | 9,752 | 1,749 |
| Total property, plant and equipment, gross | 112,603 | 98,387 |
| Less: accumulated depreciation and amortization | (83,673) | (78,631) |
| Total property, plant and equipment, net | $ 28,930 | $ 19,756 |

Property, plant and equipment, net at December 31, 2018 includes $5.0 million of machinery and equipment under capital lease. Accumulated amortization of assets under capital lease totaled $2.3 million as of December 31, 2018. For the year ended December 31, 2018, amortization expense in connection with capital lease assets was $0.7 million. Beginning January 1, 2019, capital lease assets are classified as right-of-use assets under financing leases, net; see "Leases" below.

Losses on disposal of property, plant and equipment were $0.2 million and $0.9 million for the years ended December 31, 2019 and 2018, respectively. Such losses or gains were included in the lines captioned "Research and development expense" and "Sales, general and administrative expense" in the consolidated statements of operations.

***Leases***

Prior to the modified prospective adoption of ASU 2016-02 on January 1, 2019, the Company leased certain facilities and certain laboratory equipment under operating and financing leases, respectively. The Company recognized rent expense for operating leases on a straight-line basis over the noncancelable lease term and recorded the difference between cash rent payments and the recognition of rent expense as a deferred rent liability. Where leases contained escalation clauses, rent abatements, and/or concessions, such as rent holidays and landlord or tenant incentives or allowances, the Company applied them as straight-line rent expense over the lease term. The Company had noncancelable operating lease agreements for office, research and development, and manufacturing space that expired at various dates, with the latest expiration in May 2023. Rent expense under operating leases was $5.8 million for the year ended December 31, 2018. See below for the Company's account treatment of leases upon adoption of new leasing standard.

*Operating Leases*

The Company has entered into operating leases primarily for administrative offices, laboratory equipment and other facilities. The operating leases have remaining terms that range from 1 year to 5 years, and often include one or more options to renew. These renewal terms can extend the lease term from 1 to 5 years and are included in the lease term when it is reasonably certain that the Company will exercise the option. The operating leases are classified as Right-of-use assets under operating leases, net (ROU assets) on the Company's December 31, 2019 consolidated balance sheet, and represent the Company's right to use the underlying asset for the lease term. The Company's obligation to make operating lease payments is included in

"Operating lease liabilities" and "Operating lease liabilities, net of current portion" on the Company's December 31, 2019 consolidated balance sheet. Based on the present value of the lease payments for the remaining lease term of the Company's existing leases, the Company recognized ROU assets of $29.7 million and operating lease liabilities of $33.6 million on January 1, 2019. Operating lease ROU assets and liabilities commencing after January 1, 2019 are recognized at commencement date based on the present value of lease payments over the lease term. As of December 31, 2019, total ROU assets and operating lease liabilities were $13.2 million and $19.7 million, respectively. All operating lease expense is recognized on a straight-line basis over the lease term. In the year ended December 31, 2019, the Company recorded $16.4 million of operating lease amortization that was charged to expense, of which $7.0 million was recorded to cost of products sold.

Because the rate implicit in each lease is not readily determinable, the Company uses its incremental borrowing rate to determine the present value of the lease payments. The Company has certain contracts for real estate and marketing which may contain lease and non-lease components which it has elected to treat as a single lease component.

Information related to the Company's right-of-use assets and related lease liabilities were as follows:

| | Year Ended December 31, 2019 |
|---|---|
| Cash paid for operating lease liabilities, in thousands | $ 17,809 |
| Right-of-use assets obtained in exchange for new operating lease obligations[1] | $ 33,264 |
| Weighted-average remaining lease term | 3.35 |
| Weighted-average discount rate | 18.1 % |

[1] Includes $29.7 million for operating leases existing on January 1, 2019 and $3.6 million for operating leases that commenced during the year ended December 31, 2019. Also, the Company renegotiated one of its operating leases during 2019, which resulted in a new financing lease. Approximately $7.7 million of Right-of-use assets under operating leases, net were reclassified to Right-of-use assets under financing leases, net related to this operating lease modification.

*Financing Leases*

The Company has entered into financing leases primarily for laboratory and computer equipment. Assets purchased under financing leases are included in Right-of-use assets under financing leases, net on the consolidated balance sheets. For financing leases, the associated assets are depreciated or amortized over the shorter of the relevant useful life of each asset or the lease term. At December 31, 2019, accumulated amortization of assets under financing lease was $1.7 million.

*Maturities of Financing and Operating Leases*

Maturities of lease liabilities as of December 31, 2019 were as follows:

| **Years Ending December 31 (In thousands)** | **Financing Leases** | **Operating Leases** | **Total Lease Obligations** |
|---|---|---|---|
| 2020 | $ 4,490 | $ 7,798 | $ 12,288 |
| 2021 | 4,565 | 7,541 | 12,106 |
| 2022 | — | 7,719 | 7,719 |
| 2023 | — | 3,363 | 3,363 |
| 2024 | — | 192 | 192 |
| Thereafter | — | — | — |
| Total future minimum payments | 9,055 | 26,613 | 35,668 |
| Less: amount representing interest | (1,424) | (6,951) | (8,375) |
| Present value of minimum lease payments | 7,631 | 19,662 | 27,293 |
| Less: current portion | (3,465) | (4,625) | (8,090) |
| Long-term portion | $ 4,166 | $ 15,037 | $ 19,203 |

***Other assets***

| December 31,<br>(In thousands) | 2019 | 2018 |
|---|---|---|
| Equity-method investment | $ 4,734 | $ — |
| Contingent consideration | 3,303 | 4,286 |
| Deposits | 295 | 2,465 |
| Other | 1,373 | 1,207 |
| Total other assets | $ 9,705 | $ 7,958 |

In September 2019, the Company was notified by DSM that certain contingent consideration payable to the Company upon the realization of certain NOL tax benefits transferred to DSM with the sale of the Brotas facility in December 2017 would not be realized due to changes in DSM's Brazilian legal entity structure. The Company considered this information in conjunction with the probability and timing of DSM's realization of the underlying NOL tax benefits and determined that a portion of the contingent consideration receivable was not recoverable as of December 31, 2018 and recorded a $3.9 million impairment in the statement of operations as Impairment of other assets. The Company reassessed the recoverability of this receivable at December 31, 2019 based on projected utilization of the underlying tax credits by DSM and recorded an additional impairment of $0.2 million for the year ended December 31, 2019.

In October 2019, the Company agreed to purchase the ownership interest previously held by Cosan in Novvi LLC, a joint venture among the Company, Cosan and certain other members, for $10.8 million (Purchase Price). The Company is obligated to pay the Purchase Price through the assignment of certain preferred dividends to be distributed by the proposed joint venture between the Company and Raizen Energia S.A., provided that, if the joint venture is not formed by October 2021, the Purchase Price shall be paid in full by October 31, 2022. The Company measured and recorded the fair value of the investment based on the present value of the unsecured $10.8 million obligation, which was deemed to be more readily determinable than the fair value of the Novvi partnership interest. In accordance with equity-method accounting, the Company records its share of Novvi's earnings or losses for each accounting period and adjusts the investment balance accordingly. However, the Company is not obligated to fund Novvi's potential future losses, so the Company will not record equity-method losses that would result in the investment in Novvi falling to below zero and becoming a liability. For additional information regarding the Company's accounting for equity-method investments, see Note 1, "Basis of Presentation and Summary of Significant Accounting Policies".

***Accrued and other current liabilities***

| December 31,<br>(In thousands) | 2019 | 2018 |
|---|---|---|
| Accrued interest | $ 8,209 | $ 3,853 |
| Payroll and related expenses | 7,296 | 9,220 |
| Contract termination fees | 5,347 | 4,092 |
| Ginkgo partnership payments obligation | 4,319 | 2,155 |
| Asset retirement obligation(1) | 3,184 | 3,063 |
| Professional services | 2,968 | 1,173 |
| Tax-related liabilities | 1,685 | 2,139 |
| Other | 3,647 | 3,284 |
| Total accrued and other current liabilities | $ 36,655 | $ 28,979 |

(1) The asset retirement obligation represents liabilities incurred but not yet discharged in connection with our 2013 abandonment of a partially constructed facility in Pradópolis, Brazil.

***Other noncurrent liabilities***

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| Liability for unrecognized tax benefit | $ 7,204 | $ 6,582 |
| Liability in connection with acquisition of equity-method investment | 5,249 | — |
| Ginkgo partnership payments, net of current portion (See Note 4) | 4,492 | 6,185 |
| Refund liability | 3,750 | — |
| Contract liabilities, net of current portion[(1)] | 1,449 | 1,587 |
| Deferred rent, net of current portion | — | 6,440 |
| Contract termination fees, net of current portion | — | 1,530 |
| Capital leases, net of current portion | — | 195 |
| Other | 880 | 673 |
| Total other noncurrent liabilities | $ 23,024 | $ 23,192 |

(1) Contract liabilities, net of current portion at December 31, 2019 and 2018 includes $1,204 at each date in connection with DSM, which is a related party.

In relation to the refund liability item above, in April 2019, the Company assigned the Value Sharing Agreement to DSM. See Note 9, "Revenue Recognition and Contract Assets and Liabilities" for further information. The assignment was accounted for as a contract modification under ASC 606 that resulted in variable consideration of $12.5 million in the form of a stand-ready obligation to refund some or all of the $12.5 million consideration if certain criteria are not met by December 2021. The Company periodically updates its estimate of amounts to be retained and reduces the refund liability and records additional license and royalty revenue as the criteria are met. The Company recorded an additional $8.8 million of license and royalty revenue during the year ended December 31, 2019 related to a change in the estimated refund liability, which reduced the balance to $3.8 million.

## 3. Fair Value Measurement

Assets and liabilities are measured and reported at fair value based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value. An asset's or liability's classification level is based on the lowest level of input that is significant to the fair value measurement. Assets and liabilities carried at fair value are valued and disclosed in one of the following three levels of the valuation hierarchy:

- Level 1: Quoted market prices in active markets for identical assets or liabilities.
- Level 2: Observable market-based inputs or unobservable inputs that are corroborated by market data.
- Level 3: Unobservable inputs that are not corroborated by market data.

***Liabilities Measured and Recorded at Fair Value on a Recurring Basis***

As of December 31, 2019 and 2018, the Company’s financial liabilities measured and recorded at fair value on a recurring basis were classified within the fair value hierarchy as follows:

| **December 31, (In thousands)** | **2019** | | | | **2018** | | | |
|---|---|---|---|---|---|---|---|---|
| | **Level 1** | **Level 2** | **Level 3** | **Total** | **Level 1** | **Level 2** | **Level 3** | **Total** |
| **Liabilities** | | | | | | | | |
| Senior Convertible Notes Due 2022 | $ — | $ — | $50,624 | 50,624 | $ — | $ — | $ — | $ — |
| 6% Convertible Notes Due 2021 | — | — | — | — | — | — | 57,918 | 57,918 |
| Embedded derivatives bifurcated from debt instruments | — | — | 2,832 | 2,832 | — | — | — | — |
| Freestanding derivative instruments issued in connection with other debt and equity instruments | — | — | 6,971 | 6,971 | — | — | 42,796 | 42,796 |
| Total liabilities measured and recorded at fair value | $ — | $ — | $60,427 | $60,427 | $ — | $ — | $100,714 | $100,714 |

The Company did not hold any financial assets to be measured and recorded at fair value on a recurring basis as of December 31, 2019 and 2018. Also, there were no transfers between the levels during 2019 or 2018.

The Company’s assessment of the significance of a particular input to the fair value measurement in its entirety requires management to make judgements and consider factors specific to the asset or liability. The method of determining the fair value of compound embedded derivative liabilities is described subsequently in this note. Market risk associated with compound embedded derivative liabilities relates to the potential reduction in fair value and negative impact to future earnings from a decrease in interest rates.

At December 31, 2019 and December 31, 2018, the carrying value of certain financial instruments, such as cash equivalents, accounts receivable, prepaid expenses and other current assets, accounts payable and other current accrued liabilities, approximate fair value due to their relatively short maturities and low market interest rates, if applicable.

Changes in fair value of derivative liabilities are presented as gains or losses in the consolidated statements of operations in the line captioned "Gain (loss) from change in fair value of derivative instruments".

Changes in the fair value of debt that is accounted for at fair value are presented as gains or losses in the consolidated statements of operations in the line captioned "Gain (loss) from change in fair value of debt".

*Senior Convertible Notes Due 2022*

On November 15, 2019, the Company issued $66.0 million of Senior Convertible Notes Due 2022 and elected the fair value option of accounting for this debt instrument (see Note 4, "Debt" for details). At December 31, 2019, the contractual outstanding principal of the Senior Convertible Notes Due 2022 was $66.0 million and the fair value was $50.6 million. The Company measured the fair value using a binomial lattice model (which is discussed in further detail below) with the following inputs: (i) 233% discount yield, (ii) 45% equity volatility, (iii) 25% / 75% probability of principal repayment in cash or stock, respectively and (iv) 5% probability of change in control. The Company assumed that if a change of control event were to occur, it would occur at the end of the calendar year.

In connection with the issuance of the Senior Convertible Notes Due 2022, the Company was required to pre-deliver 7.5 million shares of common stock (the Pre-Delivery Shares) to the note holders, which are freely tradeable, validly issued, fully paid, nonassessable and free from all preemptive or similar rights or liens, for the note holders to sell, trade or hold, subject to certain limitations, for as long as the Senior Convertible Notes Due 2022 are outstanding. However, the Company may elect or be required to apply the value of the pre-delivered shares to satisfy periodic principal and interest payments or other repayment events. Within ten business days following redemption or repayment of in full the Senior Convertible Notes Due 2022 and the satisfaction or discharge by the Company of all outstanding Company obligations under the Senior Convertible Notes Due 2022, the noteholders shall deliver 7.5 million shares of the Company's common stock to the Company, less any shares used to satisfy any accrued interest or principal amortization payments under such notes.

The Company concluded the Pre-Delivery Shares provision meets the criteria of freestanding instrument that is legally detachable and separately exercisable from the Senior Convertible Notes Due 2022 and should be classified in equity as the common shares issued are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the Pre-Delivery Shares within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the shares to be reclassified to an asset or liability. The Company measured the issue date fair value of the Pre-Delivery Shares under an expected borrowing cost approach using a 9.75% annual borrowing rate over a 19-month estimated repayment term for the Senior Convertible Notes Due 2022. The resulting $4.2 million fair value was recorded in equity as additional paid in capital with an offset to the fair value of the Senior Convertible Notes Due 2022. See Note 6, "Stockholders' Deficit" for further information regarding the issuance of the common stock.

For the year ended December 31, 2019, the Company recorded a $3.8 million gain from change in fair value of debt in connection with the initial issuance and subsequent fair value remeasurement of the Senior Convertible Notes Due 2022, as follows:

| ***In thousands*** | |
|---|---|
| Fair value at November 14, 2019 | $ 54,425 |
| Less: Gain from change in fair value | (3,801) |
| Fair value at December 31, 2019 | $ 50,624 |

A binomial lattice model was used to determine if the Senior Convertible Notes Due 2022 would be converted, called or held at each decision point. Within the lattice model, the following assumptions are made: (i) the convertible note will be converted early if the conversion value is greater than the holding value and (ii) the convertible note will be called if the holding value is greater than both (a) redemption price and (b) the conversion value at the time. If the convertible note is called, the holder will maximize their value by finding the optimal decision between (1) redeeming at the redemption price and (2) converting the convertible note. Using this lattice method, the Company valued the Senior Convertible Notes Due 2022 using the "with-and-without method", where the fair value of the Senior Convertible Notes Due 2022 including the embedded and freestanding features is defined as the "with", and the fair value of the Senior Convertible Notes Due 2022 excluding the embedded and freestanding features is defined as the "without". This method estimates the fair value of the Senior Convertible Notes Due 2022 by looking at the difference in the values of Senior Convertible Notes Due 2022 with the embedded and freestanding derivatives and the fair value of Senior Convertible Notes Due 2022 without the embedded and freestanding features. The lattice model uses the stock price, conversion price, maturity date, risk-free interest rate, estimated stock volatility and estimated credit spread. The Company remeasures the fair value of the debt instrument and records the change as a gain or loss from change in fair value of debt in the statement of operations for each reporting period.

*6% Convertible Notes Due 2021*

On December 10, 2018, the Company issued $60.0 million of 6% Convertible Notes Due 2021 (see Note 4, "Debt" for details) and elected the fair value option of accounting for this debt instrument. The notes were extinguished in November 2019. The Company recorded a $23.2 million loss from change in fair value of debt in the year ended December 31, 2019 prior to extinguishing the debt.

*Derivative Liabilities Recognized in Connection with the Issuance of Debt and Equity Instruments*

The following table provides a reconciliation of the beginning and ending balances for the Company's derivative liabilities recognized in connection with the issuance of debt and equity instruments – either freestanding or compound embedded – measured at fair value using significant unobservable inputs (Level 3):

| (In thousands) | Equity-related Derivative Liability | Debt-related Derivative Liability | Total Derivative Liability |
|---|---|---|---|
| Balance at December 31, 2018 | $ 41,272 | $ 1,524 | $ 42,796 |
| Derecognition upon adoption of ASU 2017-11 | (39,513) | (1,524) | (41,037) |
| Fair value of derivative liabilities issued during the period | — | 15,158 | 15,158 |
| Change in fair value of derivative liabilities | 2,039 | (4,816) | (2,777) |
| Derecognition on extinguishment | (3,798) | (539) | (4,337) |
| Balance at December 31, 2019 | $ — | $ 9,803 | $ 9,803 |

As of December 31, 2019, the $3.8 million derivative liability recorded in connection with the November 2018 Securities Purchase Agreement with DSM was settled and extinguished through a cash payment in April 2019.

During the second half of 2019, the Company issued four debt instruments with an embedded mandatory redemption feature and two freestanding liability classified warrants with conversion rate adjustment and antidilution provisions. See Note 4, "Debt" for a description of the transactions and the initial accounting treatment for these debt related derivatives. There is no current observable market for these types of derivatives and the Company determined the fair value of the embedded mandatory redemption feature using a probability weighted discounted cash flow model measuring the fair value of the debt instrument both with and without the embedded feature, which is discussed in more detail below; and the freestanding liability warrants using a Black-Scholes-Merton option pricing model, which is also discussed in more detail below.

The collective fair value of the four embedded derivatives totaled $2.5 million at issuance date and were recorded as a derivative liability and a debt discount against the underlying debt instruments. In the fourth quarter of 2019, the Company modified certain key terms in two of the four underlying debt instruments, resulting in a debt extinguishment of the two instruments. Consequently, the collective fair value of the two embedded derivative liabilities totaling $0.5 million were written off against the loss on debt extinguishment and the $0.7 million collective fair value of the two new embedded mandatory redemption features were recorded as derivative liabilities at the date of debt modification. The collective fair value of the four embedded derivative liabilities totaled $2.8 million at December 31, 2019.

The freestanding liability warrants issued on September 10, 2019 and November 14, 2019 had an initial fair value of $7.9 million and $4.0 million, respectively and were recorded as a derivative liability and a debt discount. The warrants will be remeasured each reporting period until settled or extinguished with subsequent changes in fair value recorded through the statement of operations as a gain or loss on change in fair value of derivative liabilities. At December 31, 2019 the warrants derivative had a fair value of $6.9 million. For the year ended December 31, 2019, the Company recorded a $4.8 million gain from change in fair value of debt-related embedded derivative liabilities.

*Valuation Methodology and Approach to Measuring the Derivative Liabilities*

The liabilities associated with the Company's freestanding and compound embedded derivatives outstanding at December 31, 2019 and 2018 represent the fair value of freestanding equity instruments, mandatory redemption features embedded in certain debt instruments and antidilution provisions in some of the Company's debt warrant instruments. See Note 4, "Debt", and Note 6, "Stockholders' Deficit" for further information regarding these host instruments. There is no current observable market for these types of derivatives and, as such, the Company determined the fair value of the freestanding instrument or embedded derivatives using the Black-Scholes-Merton option pricing model, a probability weighted discounted cash flow analysis, or a Monte Carlo simulation.

The Company uses the Black-Scholes-Merton option pricing model to determine the fair value of its liability classified warrants issued in 2019. Input assumptions for these freestanding instruments are as follows:

| Input assumptions for liability classified warrants: | Range |
|---|---|
| Fair value of common stock on issue date | $3.09 – $4.76 |
| Expected volatility | 94% - 105% |
| Risk-free interest rate | 1.58% - 1.67% |
| Dividend yield | 0.0 % |

The Company uses a probability weighted discounted cash flow model to measure the fair value of the mandatory redemption features embedded in the four debt instruments issued in the second half of 2019. The model is designed to measure and determine if the debt instruments would be called or held at each decision point. Within the model, the following assumption is made: the underlying debt instrument will be called early if the change in control redemption value is greater than the holding value. If the underlying debt instrument is called, the holder will maximize their value by finding the optimal decision between (i) redeeming at the redemption price and (ii) holding the instrument until maturity. Using this assumption, the Company valued the embedded derivatives on a "with-and-without method", where the fair value of each underlying debt instrument including the embedded derivative is defined as the "with", and the fair value of each underlying debt instrument excluding the embedded derivatives is defined as the "without". This method estimates the fair value of the embedded derivatives by comparing the fair value differential between the with and without mandatory redemption feature. The model incorporates the mandatory redemption price, time to maturity, risk-free interest rate, estimated credit spread and estimated probability of a change in control default event.

The Company used a Monte Carlo simulation valuation model to determine the fair value of the May 2017 and August 2017 Cash and Dilution Warrants through December 31, 2018. Upon adoption of ASU 2017-11 on January 1, 2019, the fair value of these warrants was reclassified to equity as they no longer met the criteria for derivative liability accounting. Monte Carlo simulation combines a random number generator based on a probability distribution and additional inputs of volatility, time to expiration to generate a stock price and other uncertainties. The generated stock price at the time of expiration is then used to calculate the value of the option. The model then calculates results tens of thousands of times, each time using a different set of random values from the probability functions. The resulting Monte Carlo simulation valuation is based on the average of all the calculated results.

The market-based assumptions and estimates used in valuing the compound embedded and freestanding derivative liabilities include amounts in the following ranges/amounts:

| December 31, | 2019 | 2018 |
|---|---|---|
| Risk-free interest rate | 1.6% - 1.7% | 2.5% - 3.0% |
| Risk-adjusted discount yield | 20.0% - 27.0% | 17.2% - 27.3% |
| Stock price volatility | 45% | 45.0% - 85.0% |
| Probability of change in control | 5.0% | 0.0% |
| Stock price | $3.09 | $3.34 |
| Credit spread | 18.4% - 25.4% | 14.6% - 24.9% |
| Estimated conversion dates | 2022 - 2023 | 2019 - 2025 |

Changes in valuation assumptions can have a significant impact on the valuation of the embedded and freestanding derivative liabilities and debt that the Company elects to account for at fair value. For example, all other things being equal, a decrease/increase in the Company's stock price, probability of change of control, credit spread, term to maturity/conversion or stock price volatility decreases/increases the valuation of the liabilities, whereas a decrease/increase in risk adjusted yields or risk-free interest rates increases/decreases the valuation of the liabilities. Certain of the convertible notes, shares of convertible preferred stock and warrants also include conversion or exercise price adjustment features and, for example, certain issuances of common stock by the Company at prices lower than the current conversion or exercise price result in a reduction of the conversion price of such notes or convertible preferred stock, or a reduction in the exercise price of, or an increase in the number of shares subject to, such warrants, which increases the value of the embedded and freestanding derivative liabilities and debt measured at fair value; see Note 4, "Debt" for details.

***Assets and Liabilities Recorded at Carrying Value***

*Financial Assets and Liabilities*

The carrying amounts of certain financial instruments, such as cash equivalents, accounts receivable, accounts payable and accrued liabilities, approximate fair value due to their relatively short maturities and low market interest rates, if applicable. Loans payable and credit facilities are recorded at carrying value, which is representative of fair value at the date of acquisition. The Company estimates the fair value of these instruments using observable market-based inputs (Level 2). The carrying amount (the total amount of net debt presented on the balance sheet) of the Company's debt at December 31, 2019 and at December 31, 2018, excluding the debt instruments recorded at fair value, was $195.8 million and $151.8 million, respectively. The fair value of such debt at December 31, 2019 and at December 31, 2018 was $194.8 million and $149.3 million,

respectively, and was determined by (i) discounting expected cash flows using current market discount rates estimated for certain of the debt instruments and (ii) using third-party fair value estimates for the remaining debt instruments.

***Assets and Liabilities Measured and Recorded at Fair Value on a Non-Recurring Basis***

On November 19, 2018, the Company amended its supply agreement with DSM, as discussed in Note 9, “Revenue Recognition” to secure production capacity at the Brotas facility in exchange for future cash payments totaling $22.7 million, the issuance of 1,643,991 shares common stock valued at $6.1 million on the date of issuance and a further cash payment for the difference between the fair value of the common stock and $7.3 million on March 29, 2019. In addition, the Company modified certain warrants held by DSM which resulted in the transfer of $2.9 million of value to DSM and paid $1.8 million to settle certain obligations to DSM related to the 2017 sale of the Brotas facility. The Company also entered into other transactions contemporaneously with the amended supply agreement as discussed in Note 10, “Related Party Transactions”. This series of transactions with DSM in November 2018 was accounted for as a combined transaction in which the Company determined and allocated the fair value of the consideration to each element. The fair value of the consideration transferred to DSM under the combined arrangement totaled $33.3 million and was allocated as follows (in thousands):

| Element | Fair Value Allocation |
|---|---|
| Manufacturing capacity reservation fee | $ 24,395 |
| Legal settlement and consent waiver | 6,764 |
| Working capital adjustment | 2,145 |
| Total fair value of consideration transferred | $ 33,304 |

The fair value of these elements is based on Level 3 inputs, which considered the lowest level of input that is significant to the fair value measurement of these elements. To determine the fair value of the manufacturing capacity reservation fee, the Company used a discounted cash flow model under a cost savings valuation approach based on a competing manufacturing quote for similar capacity, location and timing. The Company used a discount rate of 22.5% and a tax rate of 0% to discount the gross cash flows. The fair value of the legal settlement for failure to obtain consent from DSM prior to executing the August 2018 Vivo Warrant transaction was determined by calculating the difference between the fair values of the warrants held by Vivo prior to and after the August 2018 Vivo Warrant transaction using a combination of a Monte Carlo simulation and the Black-Scholes-Merton option pricing model. The fair value of the working capital adjustment was determined to equal the difference between the preliminary estimate for working capital upon closing the Brotas facility sale and the final working capital amounts transferred.

## 4. Debt

| December 31, (In thousands) | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|
| | Principal | Unaccreted Debt (Discount) Premium | Fair Value Adjustment | Net | Principal | Unaccreted Debt (Discount) Premium | Fair Value Adjustment | Net |
| *Convertible notes payable* | | | | | | | | |
| Senior convertible notes due 2022 | $ 66,000 | $ — | $ (15,376) | $ 50,624 | $ — | $ — | $ — | $ — |
| 6% convertible notes due 2021 | — | — | — | — | 60,000 | — | (2,082) | 57,918 |
| 2015 Rule 144A convertible notes | — | — | — | — | 37,887 | (2,413) | — | 35,474 |
| 2014 Rule 144A convertible notes | — | — | — | — | 24,004 | (867) | — | 23,137 |
| August 2013 financing convertible notes | — | — | — | — | 4,415 | (70) | — | 4,345 |
| | 66,000 | — | (15,376) | 50,624 | 126,306 | (3,350) | (2,082) | 120,874 |
| *Related party convertible notes payable* | | | | | | | | |
| 2014 Rule 144A convertible notes | 10,178 | — | — | 10,178 | 24,705 | (1,038) | — | 23,667 |
| | 10,178 | — | — | 10,178 | 24,705 | (1,038) | — | 23,667 |
| *Loans payable and credit facilities* | | | | | | | | |
| Schottenfeld notes | 20,350 | (1,315) | — | 19,035 | — | — | — | — |
| Nikko notes | 14,318 | (901) | — | 13,417 | 4,598 | (1,047) | — | 3,551 |
| Ginkgo note | 12,000 | (3,139) | — | 8,861 | 12,000 | (4,047) | — | 7,953 |
| Other loans payable | 1,828 | — | — | 1,828 | 312 | — | — | 312 |
| GACP term loan facility | — | — | — | — | 36,000 | (1,349) | — | 34,651 |
| | 48,496 | (5,355) | — | 43,141 | 52,910 | (6,443) | — | 46,467 |
| *Related party loans payable* | | | | | | | | |
| Foris notes | 115,351 | (9,516) | — | 105,835 | — | — | — | — |
| DSM notes | 33,000 | (4,621) | — | 28,379 | 25,000 | (6,311) | — | 18,689 |
| Naxyris note | 24,437 | (822) | — | 23,615 | — | — | — | — |
| | 172,788 | (14,959) | — | 157,829 | 25,000 | (6,311) | — | 18,689 |
| Total debt | $ 297,462 | $ (20,314) | $ (15,376) | 261,772 | $ 228,921 | $ (17,142) | $ (2,082) | 209,697 |
| Less: current portion | | | | (63,805) | | | | (147,677) |
| Long-term debt, net of current portion | | | | $ 197,967 | | | | $ 62,020 |

Future minimum payments under the debt agreements as of December 31, 2019 are as follows:

| Years ending December 31 (In thousands) | Convertible Notes | Loans Payable and Credit Facilities | Related Party Convertible Notes | Related Party Loans Payable and Credit Facilities | Total |
|---|---|---|---|---|---|
| 2020 | $ 43,384 | $ 26,324 | $ 10,437 | $ 33,730 | $ 113,875 |
| 2021 | 40,177 | 3,342 | — | 53,566 | 97,085 |
| 2022 | — | 15,177 | — | 113,818 | 128,995 |
| 2023 | — | 13,011 | — | 24,323 | 37,334 |
| 2024 | — | 398 | — | — | 398 |
| Thereafter | — | 1,870 | — | — | 1,870 |
| Total future minimum payments | 83,561 | 60,122 | 10,437 | 225,437 | 379,557 |
| Less: amount representing interest[1] | (17,561) | (11,626) | (259) | (52,649) | (82,095) |
| Less: future conversion of accrued interest to principal | — | — | — | — | — |
| Present value of minimum debt payments | 66,000 | 48,496 | 10,178 | 172,788 | 297,462 |
| Less: current portion of debt principal | (31,800) | (21,193) | (10,178) | (11,380) | (74,551) |
| Noncurrent portion of debt principal | $ 34,200 | $ 27,303 | $ — | $ 161,408 | $ 222,911 |

[1] Excluding net debt discount of $20.3 million that will be amortized to interest expense over the term of the debt.

*August 2013 Financing Convertible Note*

On January 14, 2019, Wolverine Flagship Fund Trading Limited (Wolverine) agreed to waive payment of the August 2013 Financing Convertible Note held by Wolverine at its January 15, 2019 maturity until July 15, 2019 in exchange for a fee, payable on or prior to July 15, 2019, of $0.6 million. The due date of the waiver fee was extended to October 13, 2019 and was subsequently paid on October 29, 2019. The Company concluded that the maturity date extension represented a debt modification, and the fee was accounted for as additional debt discount to be amortized over the remaining term.

On July 8, 2019, $5.1 million principal balance of the convertible note and unpaid interest was exchanged for 1.8 million shares of common stock with a total fair value of $5.9 million or $3.30 per share and a warrant to purchase 1.1 million shares of common stock with a fair value of $1.9 million. The Company recorded a $2.7 million loss on debt extinguishment for the difference between the carrying value of the debt and the sum of the fair values of the common stock and warrant. See Note 6, “Stockholders’ Deficit” for additional information regarding the fair value measurement of the common stock and warrant issued in connection with this exchange.

*2015 Rule 144A Convertible Notes Extinguishment*

On April 16, 2019, the Company repaid in cash the $37.9 million outstanding principal, as well as accrued and unpaid interest, under its 9.50% Convertible Senior Notes due 2019 (the 2015 Rule 144A Convertible Notes). This repayment did not result in an extinguishment gain or loss.

*2014 Rule 144A Convertible Notes*

In May 2019, the Company exchanged a portion of its 6.50% Convertible Senior Notes (the 2014 Rule 144A Convertible Notes), representing $38.2 million aggregate principal amount of 2014 Rule 144A Convertible Notes, for shares of common stock, warrants to purchase common stock and a new senior convertible note as described below and repaid the remaining $10.5 million of the 2014 Rule 144A Convertible Notes in cash at maturity.

*Notes Conversion into Common Stock*

On May 10, 2019, the Company exchanged $13.5 million aggregate principal amount of 2014 Rule 144A Convertible Notes held by certain non-affiliated investors, including accrued and unpaid interest thereon, for an aggregate of 3.5 million shares of common stock and warrants to purchase an aggregate of 1.4 million shares of common stock at an exercise price of $5.02 per share, with an exercise term of two years from issuance, in a private exchange.

On May 14, 2019, the Company exchanged $5.0 million aggregate principal amount of 2014 Rule 144A Convertible Notes held by Foris, including accrued and unpaid interest thereon, for 1.1 million shares of common stock and a warrant to purchase up to 0.4 million shares of common stock at an exercise price of $4.56 per share, with an exercise term of two years from issuance, in a private exchange. On August 28, 2019, the Company and Foris agreed to reduce the exercise price of such warrant from $4.56 per share to $3.90 per share in connection with the “August 2019 Foris Credit Agreements” below. Also, see Note 6, “Stockholders’ Deficit” for additional information and Note 15, “Subsequent Events” for information regarding the amendment and exercise of the warrants on January 31, 2020.

On May 15, 2019, the Company exchanged $10.0 million aggregate principal amount of 2014 Rule 144A Convertible Notes held by Maxwell (Mauritius) Pte Ltd for 2.5 million shares of common stock in a private exchange.

The Company evaluated the May 2019 note conversions into common stock discussed above and concluded that the transactions resulted in a debt extinguishment. The Company recorded a $5.9 million loss on debt extinguishment of the 2014 144A Convertible Notes in the three months ended June 30, 2019. The loss represented the difference between the $30.8 million fair value of 7.1 million common shares issued upon exchange, $3.8 million fair value of warrants issued to purchase 1.7 million shares of common stock and $0.4 million of fees incurred, less the $29.1 million carrying value of the debt that was extinguished. See Note 6. "Stockholders’ Deficit" for further information regarding the fair value measurement of the common stock and warrants issued in connection with the May 2019 note conversions discussed above.

*Total Note Exchange and Extensions*

On May 15, 2019, the Company exchanged $9.7 million aggregate principal amount of 2014 Rule 144A Convertible Notes due May 15, 2019 held by Total Raffinage Chimie (Total) for a new senior convertible note (the New Note) with an equal principal amount and with substantially identical terms, except that the New Note had a maturity date of June 14, 2019.

Effective June 14, 2019, the Company and Total agreed to extend the maturity date of the New Note from June 14, 2019 to July 18, 2019. Effective July 18, 2019, the Company and Total agreed to (i) further extend the maturity date of the New Note from July 18, 2019 to August 28, 2019 and (ii) increase the interest rate on the New Note to 10.5% per annum, beginning July 18, 2019. Effective August 28, 2019, the Company and Total agreed to (i) further extend the maturity date of the New Note from August 28, 2019 to October 28, 2019 and (ii) increase the interest rate on the New Note to 12% per annum, beginning August 28, 2019. On October 31, 2019, the Company and Total agreed, effective as of October 28, 2019, to (i) extend the maturity date of the New Note from October 28, 2019 to December 16, 2019 and (ii) capitalize all interest accruing under the New Note from May 15, 2019 through and including November 14, 2019, in the amount of $0.5 million, which interest would be added to the principal of the New Note, which would begin accruing interest on such new principal amount on November 15, 2019. Effective December 16, 2019, the Company and Total agreed to extend the maturity date of the New Note from December 16, 2019 to January 31, 2020. See Note 15, "Subsequent Events" for further information regarding the Company's failure to repay the $10.2 million New Note by January 31, 2020.

The Company accounted for the note exchange and series of extensions with Total as a debt modification; however, no additional fees were paid in connection with the exchange and extensions, and consequently there was no impact on the carrying value of the debt as of December 31, 2019.

*Foris Debt Transactions—Related Party*

The Company has loans payable to Foris Ventures, LLC (Foris) with a total principal balance of $115.4 million at December 31, 2019. Foris is an entity affiliated with director John Doerr of Kleiner Perkins Caufield & Byers, a current stockholder, and an owner of greater than five percent of the Company's outstanding common stock. The notes payable to Foris are comprised of the following (amounts in thousands):

| Description | Date Issued | Original Loan Amount | Balance at December 31, 2019 | Interest Rate per Annum | Maturity Date |
|---|---|---|---|---|---|
| Foris $19 Million Note | August 28, 2019 | $ 19,000 | $ 19,000 | 12.0% | January 1, 2023 |
| Foris LSA | April 15, 2019 | 36,000 | 96,351 | 12.5% | For $81.0 million borrowed prior to November 27, 2019, the maturity date is July 1, 2022; for $10.0 million borrowed November 27, 2019, the maturity date is March 31, 2023. |
| | | $ 55,000 | $ 115,351 | | |

*Foris Credit Agreements*

On April 8, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $8.0 million (the April Foris Credit Agreement), which the Company borrowed in full on April 8, 2019 and issued to Foris a promissory note in the principal amount of $8.0 million (the April Foris Note). The April Foris Note has a maturity date of October 14, 2019, which has no stated interest rate. The Company agreed to pay Foris a fee of $1.0 million, payable on or prior to the maturity date; provided, that the fee will be reduced to $0.5 million if the Company repays the April Foris Note in full by July 15, 2019. The Company accrues this fee as interest expense over the six-month term of the note.

On June 11, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $8.5 million, which the Company borrowed in full on June 11, 2019 and issued to Foris a promissory note in the principal amount of $8.5 million (the June Foris Note). The June Foris Note (i) accrues interest at a rate of 12.5% per annum and is payable on the maturity date or the earlier repayment or other satisfaction of the June Foris Note, and (ii) matured on August 28, 2019.

On July 10, 2019, the Company and Foris entered into a credit agreement to make available to the Company an unsecured credit facility in an aggregate principal amount of $16.0 million (the July Foris Credit Agreement), of which the Company borrowed $8.0 million on July 10, 2019 and $8.0 million on July 26, 2019 and issued to Foris promissory notes, each in the principal amount of $8.0 million, on such dates (the July Foris Notes). The July Foris Notes (i) accrue interest at a rate of 12.5% per annum, which is payable on the maturity date or the earlier repayment or other satisfaction of the applicable July Foris Note, and (ii) mature on December 31, 2019.

In connection with the entry into the July Foris Credit Agreement, the Company and Foris amended the warrant issued to Foris on August 17, 2018 to reduce the exercise price of such warrant from $7.52 per share to $2.87 per share. The warrant modification resulted in $4.0 million of incremental value which was accounted for as a debt discount to the $16 million July

Foris Notes. See Note 6, "Stockholders' Deficit" for additional information regarding the fair value measurement of the modified warrant.

On August 14, 2019, the April Foris Note, the June Foris Note and the July Foris Notes were added to the loans under the LSA, made subject to the LSA and secured by the security interest in the collateral granted to Foris under the LSA, and such notes were cancelled in connection therewith. See "LSA Assignment, Amendments and Waiver" below for further information.

*Foris LSA Assignment, Amendments and Waivers*

On April 4, 2019, the Company and GACP Finance Co., LLC (GACP) amended the Loan and Security Agreement, dated June 29, 2018 (as amended, the LSA), to remove, add and modify certain restrictions, covenants and other provisions and to waive breaches of certain covenants under the LSA occurring prior to, as of and after December 31, 2018 through April 8, 2019. In connection with such waiver, the Company agreed to pay GACP fees of $0.8 million, which the Company paid in April 2019. This waiver fee was recorded as interest expense in the statement of operations in the nine months ended September 30, 2019.

On April 15, 2019, the Company, GACP and Foris Ventures, LLC (Foris), an entity affiliated with director John Doerr of Kleiner Perkins Caufield & Byers, a current stockholder, and an owner of greater than 5% of the Company's outstanding common stock) entered into a Loan Purchase Agreement, pursuant to which Foris agreed to purchase and assume from GACP, the outstanding principal balance under the LSA, which totaled $36.0 million and all documents and assets related thereto. In connection with such purchase and assignment, the Company agreed to repay Foris $2.5 million of the purchase price and accrued interest paid by Foris to GACP (the LSA Obligation). The closing of the loan purchase and assignment occurred on April 16, 2019.

On August 14, 2019, the Company and Foris entered into an Amendment No. 5 and Waiver to the LSA (the LSA Amendment and Waiver), pursuant to which (i) the maturity date of the loans under the LSA was extended from July 1, 2021 to July 1, 2022, (ii) the interest rate for the loans under the LSA was modified to the greater of (A) 12% or (B) the rate of interest payable with respect to any indebtedness of the Company, including, but not limited to, the rate of interest charged pursuant to the Naxyris Loan Agreement, provided, that for such purpose, the rate of interest charged pursuant to the Naxyris Loan Agreement shall be the rate of interest payable by the Borrower pursuant to the Naxyris Loan Agreement, minus 25 basis points (iii) the amortization of the loans under the LSA was delayed until December 16, 2019, (iv) certain accrued and future interest and agency fee payments under the LSA were delayed until December 16, 2019, (v) certain covenants under the LSA, including related definitions, were amended to provide the Company with greater operational and financial flexibility, including, without limitation, to permit the incurrence of the indebtedness under the August 2019 Naxyris Loan (as described below) and the granting of liens with respect thereto, subject to the terms of an intercreditor agreement between Foris and Naxyris S.A. (Naxyris) governing the respective rights of the parties with respect to, among other things, the assets securing the Naxyris Loan Agreement (as defined below) and the LSA (the Intercreditor Agreement), (vi) certain outstanding unsecured promissory notes issued by the Company to Foris on April 8, 2019, June 11, 2019, July 10, 2019 and July 26, 2019 (as described in the "Foris Credit Agreements" section above), in an aggregate principal amount of $32.5 million, as well as the $2.5 million LSA Obligation, were added to the loans under the LSA, made subject to the LSA and secured by the security interest in the collateral granted to Foris under the LSA, and such promissory notes and contractual obligation were canceled in connection therewith, and (vii) Foris agreed to waive certain existing defaults under the LSA, including with respect to covenants related to cross-defaults, minimum liquidity and minimum asset coverage requirements. After giving effect to the LSA Amendment and Waiver, there was $71.0 million aggregate principal amount of loans outstanding under the LSA.

The Company also issued to Foris a warrant (the LSA Warrant) on August 14, 2019 to purchase up to 1.4 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. The warrant had a fair value of $2.9 million, which was measured using the Black-Scholes-Merton option pricing model. See Note 6, "Stockholders' Deficit" for further information regarding the fair value measurement and issuance of this warrant.

Due to multiple changes in key provisions of the LSA from April 15, 2019 through August 14, 2019, the Company analyzed the before and after cash flows from the prior twelve months of modifications resulting from the increased principal balance, decreased interest rate, extended maturity date, waiver of default interest and the fair value of the new LSA Warrant provided to Foris in order to determine if these changes result in a modification or extinguishment of the original LSA. Based on the combined before and after cash flows of the five separate note balances making up the new principal balance of the LSA and the fair value of the LSA warrant, the change in cash flows was not significantly different. Consequently, the LSA Amendment and Waiver was accounting for as a debt modification with the $2.9 million fair value of the LSA Warrant

recorded as an increase to additional paid in capital and as a debt discount to be amortized to interest expense under the effective interest method over the remaining term of the LSA.

*Foris LSA Amendments, Additional Loan and Warrant Issuance*

On October 10, 2019, the Company and Foris entered into Amendment No. 6 to the LSA (the October 2019 LSA Amendment), pursuant to which the maximum loan commitment of Foris under the LSA was increased by $10.0 million. On October 11, 2019, the Company borrowed an additional $10.0 million from Foris under the LSA (the October 2019 LSA Loan), which is subject to the terms and provisions of the LSA, including the lien on substantially all the assets of the Company. After giving effect to the LSA Loan, there was $81.0 million aggregate principal amount of loans outstanding under the LSA. Also, in connection with the October 2019 LSA Amendment, the Company issued a warrant (the October 2019 Foris LSA Warrant) to purchase up to 2.0 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. The warrant had a fair value of $4.1 million which was measured using the Black-Scholes-Merton option pricing model. See Note 6, "Stockholders' Deficit" for further information regarding the fair value measurement and issuance of this warrant.

On October 28, 2019, the Company and Foris entered into an amended and restated LSA (the A&R LSA), pursuant to which, among other things, certain covenants and related definitions were amended to permit the incurrence of the indebtedness under the October 2019 Naxyris Loan (as defined below), subject to the terms of an amended and restated intercreditor agreement, dated October 28, 2019, between Foris and Naxyris governing the respective rights of the parties with respect to, among other things, the assets securing the A&R Naxyris LSA (as defined below) and the A&R LSA, and additional covenants were added relating to, among other things, maintenance of intellectual property, compliance with laws, delivery of reports and repayment of indebtedness.

On November 27, 2019, the Company borrowed an additional $10.0 million from Foris under the A&R LSA dated October 28, 2019. The new loan has identical terms to the previous loans under the LSA except that the maturity date is March 31, 2023 (as opposed to July 1, 2022 for the other loans under the LSA). In connection with the new loan, the Company issued a warrant to purchase up to 1,000,000 shares of common stock at an exercise price of $3.87 per share, exercisable for a period of two years from issuance (the November 2019 Foris Warrant). The warrant had a fair value of $2.1 million which was measured using the Black-Scholes-Merton option pricing model. See Note 6, "Stockholders' Deficit" for further information regarding the fair value measurement and issuance of this warrant. After giving effect to the LSA Loan, there was $91.0 million aggregate principal amount of loans outstanding under the A&R LSA.

Due to multiple changes in key provisions of the LSA through November 27, 2019, the Company analyzed the before and after cash flows from the prior twelve months of modifications resulting from the increased principal balance, decreased interest rate, extended maturity date, waiver of default interest and the fair value of the new LSA Warrant, the October 2019 Foris Warrant and the November 2019 Foris Warrant provided to Foris in order to determine if these changes result in a modification or extinguishment of the original LSA. Based on the combined before and after cash flows of the various note balances making up the new principal balance of the LSA and the fair value of the three warrants, the Company determined that the change in cash flows through and including the October 2019 LSA Amendment were significantly different. Consequently, the October 2019 LSA Amendment was accounting for as a debt extinguishment and a new debt issuance. The Company recorded a $12.8 million loss on extinguishment comprised of (i) $8.7 million unamortized debt discount and (ii) the $4.1 million fair value of the October 2019 Foris LSA Warrant (a non-cash fee paid to the lender).

However, the change in cash flows from the October 2019 LSA Amendment to the November 27, 2019 borrowing under the A&R LSA were not significantly different. As a result, the A&R LSA was accounting for as a debt modification. The Company recorded a new $3.5 million debt discount, comprised of (i) $2.1 million fair value of the November 2019 Warrant, recorded as an increase to additional paid in capital and as a debt discount to be amortized to interest expense under the effective interest method over the remaining term of the A&R LSA, and (ii) $1.4 million fair value of a bifurcated embedded mandatory redemption feature, recorded as a derivative liability and as a debt discount to be amortized to interest expense under the effective interest method over the remaining term of the A&R LSA. See Note 3, "Fair Value Measurement" for further information on the valuation and subsequent fair value accounting for the bifurcated embedded derivative.

*August 2019 Foris Credit Agreements*

On August 28, 2019, the Company and Foris entered into a credit agreement for an unsecured credit facility in an aggregate principal amount of $19.0 million (the August 2019 Foris Credit Agreement), which the Company borrowed in full on August 28, 2019 (the Foris $19 Million Note). The Foris $19 Million Note (i) accrues interest at a rate of 12% per annum, which is payable quarterly in arrears on each March 31, June 30, September 30 and December 31, beginning December 31,

2019, and (ii) matures on January 1, 2023. The Company may at its option repay the amounts outstanding under the Foris $19 Million Note before the maturity date, in whole or in part, at a price equal to 100% of the amount being repaid plus accrued and unpaid interest on such amount to the date of repayment.

The Foris $19 Million Note also contained a mandatory redemption feature that was not clearly and closely related to the debt host instrument, and thus, required bifurcation and separate accounting as a derivative liability. The embedded feature had an initial fair value of $0.5 million and was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the Foris $19 Million Note. See Note 3, "Fair Value Measurement" for information regarding the fair value measurement and subsequent accounting for the embedded mandatory redemption feature.

In connection with the entry into the August 2019 Foris Credit Agreement, the Company issued to Foris a warrant (the August 2019 Foris Warrant) to purchase up to 4.9 million shares of Common Stock at an exercise price of $3.90 per share, with an exercise term of two years from issuance. See Note 6, "Stockholders' Deficit" for information regarding the fair value measurement and issuance of this warrant. The warrant had a $8.7 million fair value and a $5.2 million relative fair value after allocating the Foris $19 Million Note proceeds to the $0.5 million fair value of the embedded mandatory redemption feature contained in the Foris $19 Million Note, and allocating on a residual basis, to the relative fair values of the Foris $19 Million Note and the August 2019 Foris Warrant. The $5.2 million relative fair value of the August 2019 Foris Warrant was recorded as an increase to additional paid in capital and as a debt discount to be amortized to interest expense under the effective interest method over the term of the Foris $19 Million Note.

Also, on August 28, 2019 in connection with the entry into the August 2019 Foris Credit Agreement, the Company and Foris amended the warrant to purchase up to 3.9 million shares of common stock issued to Foris on April 26, 2019 to reduce the exercise price from $5.12 per share to $3.90 per share, and amended the warrant to purchase up to 0.4 million shares of common stock issued to Foris on May 14, 2019 to reduce the exercise price from $4.56 per share to $3.90 per share. The warrant modifications resulted in $1.1 million of incremental value that was recorded as an increase to additional paid in capital and a debt discount to be amortized to interest expense under the effective interest method over the term of the Foris $19 Million Note. See Note 6, "Stockholders' Deficit" for additional information regarding the fair value measurement of these warrant modifications.

In addition to the $5.2 million relative fair value of the August 2019 Foris Warrant, the $0.5 million fair value of the embedded mandatory redemption feature, and $1.1 million incremental value related to the warrant modifications, the Company incurred $0.1 million of legal fees in connection the issuing the Foris $19 Million Note. These amounts totaled $6.8 million and were recorded as a debt discount to be amortized as interest expense under the effective interest method over the term of the Foris $19 Million Note. This note was repaid in full in January 2020; see "Warrant Exercise, Common Stock Purchase and Debt Equitization by Foris – Related Party" in Note 15, "Subsequent Events" for additional information.

*Naxyris LSA*

On August 14, 2019, the Company, certain of the Company's subsidiaries (the Subsidiary Guarantors) and, as lender, Naxyris, an existing stockholder of the Company and an investment vehicle owned by Naxos Capital Partners SCA Sicar, which is affiliated with NAXOS S.A.R.L. (Switzerland), for which director Carole Piwnica serves as director, entered into a Loan and Security Agreement (the Naxyris Loan Agreement) to make available to the Company a secured term loan facility in an aggregate principal amount of up to $10.4 million (the August 2019 Naxyris Loan), which the Company borrowed in full on August 14, 2019. In connection with the funding of the August 2019 Naxyris Loan, the Company paid Naxyris an upfront fee of $0.4 million.

Loans under the August 2019 Naxyris Loan have a maturity date of July 1, 2022 and accrue interest at a rate per annum equal to the greater of (i) 12% or (ii) the rate of interest payable with respect to any indebtedness of the Company plus 25 basis points, which interest will be payable monthly in arrears, provided that all interest accruing from and after August 14, 2019 through December 1, 2019 shall be due and payable on December 15, 2019.

The obligations of the Company under the Naxyris Loan Agreement are (i) guaranteed by the Subsidiary Guarantors and (ii) secured by a perfected security interest in substantially all of the assets of the Company and the Subsidiary Guarantors (the Collateral), junior in payment priority to Foris subject to certain limitations and exceptions, as well as the terms of the Intercreditor Agreement.

Mandatory prepayments of the outstanding amounts under the August 2019 Naxyris Loan will be required upon the occurrence of certain events, including asset sales, a change in control, and the incurrence of additional indebtedness, subject

to certain exceptions and reinvestment rights. Outstanding amounts under the August 2019 Naxyris Loan must also be prepaid to the extent that the borrowing base exceeds the outstanding principal amount of the loans under the August 2019 Naxyris Loan. In addition, the Company may at its option prepay the outstanding principal amount of the loans under the August 2019 Naxyris Loan in full before the maturity date. Any prepayment of the loans under the August 2019 Naxyris Loan prior to the maturity date, whether pursuant to a mandatory or optional prepayment, is subject to a prepayment charge equal to one year's interest at the then-current interest rate for the August 2019 Naxyris Loan. Upon any repayment of the loans under the August 2019 Naxyris Loan, whether on the maturity date or earlier pursuant to an optional or mandatory prepayment, the Company will pay Naxyris an end of term fee based on a percentage of the aggregate amount borrowed. In addition, (i) the Company will be required to pay a fee equal to 6% of any amount the Company fails to pay within three business days of its due date and (ii) any interest that is not paid when due will be added to principal and will accrue compound interest at the applicable rate.

The August 2019 Naxyris Loan contains customary affirmative and negative covenants and financial covenants, including covenants related to minimum revenue, minimum liquidity and minimum asset coverage requirements.

The August 2019 Naxyris Loan also contained a mandatory redemption feature that was not clearly and closely related to the debt host instrument, and thus, required bifurcation and separate accounting as a derivative liability. The embedded feature had an initial fair value of $0.3 million and was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the August 2019 Naxyris Loan. See Note 3, "Fair Value Measurement" for information regarding the fair value measurement and subsequent accounting for the embedded mandatory redemption feature.

In connection with the entry into the August 2019 Naxyris Loan, on August 14, 2019 the Company issued to Naxyris a warrant (the Naxyris LSA Warrant) to purchase up to 2.0 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. See Note 6, "Stockholders' Deficit" for information regarding the fair value measurement and issuance of this warrant. The warrant had a $4.0 million fair value and a $3.0 million relative fair value after allocating the August 2019 Naxyris Loan proceeds to the $0.3 million fair value of the embedded mandatory redemption feature contained in the August 2019 Naxyris Loan, and allocating on a residual basis, to the relative fair values of the August 2019 Naxyris Loan and the Naxyris LSA Warrant. The $3.0 million relative fair value of the Naxyris LSA Warrant was recorded as an increase to additional paid in capital and as a debt discount to be amortized to interest expense under the effective interest method over the term of the August 2019 Naxyris Loan.

In addition to the $3.0 million relative fair value of the Naxyris LSA Warrant and the $0.3 million fair value of the embedded mandatory redemption feature, the August 2019 Naxyris Loan contained $0.4 million original issue discount, $0.5 million mandatory end of term fee and $0.3 million of issuances costs, all totaling $4.5 million. All such amounts were recorded as a debt discount to be amortized to interest expense over the term of the August 2019 Naxyris Loan.

*Naxyris LSA Amendment*

On October 28, 2019, the Company, the Subsidiary Guarantors and Naxyris amended and restated the Naxyris Loan Agreement (the A&R Naxyris LSA), pursuant to which the maximum loan commitment of Naxyris under the Naxyris Loan Agreement was increased by $10.4 million. On October 29, 2019, the Company borrowed an additional $10.4 million (the October 2019 Naxyris Loan) from Naxyris under the A&R Naxyris LSA, which is subject to the terms and provisions of the A&R Naxyris LSA, including the lien on substantially all of the assets of the Company and the Subsidiary Guarantors. Also, under the terms of A&R Naxyris LSA, the Company owes a 5% end of term fee on the October 2019 Naxyris Loan amount and a $2.0 million term loan fee, both of which are due at July 1, 2022 maturity or upon full repayment of the amounts borrowed under the A&R Naxyris LSA. Also, the Company paid Naxyris an upfront fee of $0.4 million at the funding date of the October 2019 Naxyris Loan. After giving effect to the October 2019 Naxyris Loan amount, there is $24.4 million aggregate principal amount of loans outstanding under the A&R Naxyris LSA.

Also, in connection with the entry into the A&R Naxyris LSA, on October 28, 2019 the Company issued to Naxyris a warrant to purchase up to 2.0 million shares of common stock, at an exercise price of $3.87 per share, with an exercise term of two years from issuance (the October 2019 Naxyris Warrant). The warrant had a $3.6 million fair value and a $2.8 million relative fair value after allocating the October 2019 Naxyris Loan proceeds to the $0.5 million fair value of the embedded mandatory redemption feature contained in the October 2019 Naxyris Loan, and allocating on a residual basis, to the relative fair values of the October 2019 Naxyris Loan and the October 2019 Naxyris Warrant. The $2.8 million relative fair value of the October 2019 Naxyris Warrant was recorded as an increase to additional paid in capital and as a loss on debt extinguishment (as discussed below).

Due to changes in key terms of the Naxyris Loan Agreement through the addition of the October 2019 Naxyris Loan, the Company analyzed the before and after cash flows under the August 2019 Naxyris Loan and October 2019 Naxyris Loan in order to determine if these changes result in a modification or extinguishment of the original Naxyris Loan Agreement. Based on the combined before and after cash flows related to the increased principal balance, increased end of term fees and the fair value of new warrants provided to Naxyris, the Company determined that the change in cash flows were significantly different. Consequently, the October 2019 Naxyris Loan was accounting for as a debt extinguishment and new debt issuance. The Company recorded a $9.7 million loss on extinguishment comprised of (i) $4.0 million of unamortized debt discount, net of the $0.3 million fair value of the bifurcated embedded mandatory redemption feature, (ii) $2.9 million of original issue discount and end of term fees and (iii) the $2.8 million fair value of the October 2019 Naxyris Warrant (a non-cash fee paid to the lender).

The October 2019 Naxyris Loan contained a mandatory redemption feature that was not clearly and closely related to the debt host instrument, and thus, required bifurcation and separate accounting as a derivative liability. The embedded feature had an initial fair value of $0.5 million and was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the new debt issuance. See Note 3, “Fair Value Measurement” for information regarding the fair value measurement and subsequent accounting for the embedded mandatory redemption feature. The Company also capitalized $0.4 million of legal fees related to the October 2019 Naxyris Loan as a debt discount.

*Schottenfeld September 2019 Credit Agreements*

On September 10, 2019, the Company entered into separate credit agreements (the Investor Credit Agreements) with each of Schottenfeld Opportunities Fund II, L.P., Phase Five Partners, LP and Koyote Trading, LLC (the Investors or Schottenfeld Holdings Group LLC) to make available to the Company unsecured credit facilities in an aggregate principal amount of $12.5 million, which the Company borrowed in full on September 10, 2019 and issued to the Investors separate promissory notes in the aggregate principal amount of $12.5 million (the Investor Notes). Each Investor Note (i) accrues interest at a rate of 12% per annum, which is payable quarterly in arrears on each March 31, June 30, September 30 and December 31, beginning December 31, 2019, and (ii) matures on January 1, 2023. The Company may at its option repay the amounts outstanding under the Investor Notes before the maturity date, in whole or in part, at a price equal to 100% of the amount being repaid plus accrued and unpaid interest on such amount to the date of repayment.

The Investor Notes also contained a mandatory redemption feature that was not clearly and closely related to the debt host instrument, and thus, required bifurcation and separate accounting as a derivative liability. The embedded feature had an initial fair value of $0.3 million and was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the Investor Notes. See Note 3, “Fair Value Measurement” for information regarding the fair value measurement and subsequent accounting for the embedded mandatory redemption feature.

In connection with the September 10, 2019 Investor Credit Agreements, the Company issued to the Investors warrants (the September 2019 Investor Warrants) to purchase up to an aggregate of 3.2 million shares of common stock at an exercise price of $3.90 per share, with an exercise term of two years from issuance. The September 2019 Investor Warrants had a $7.9 million fair value which was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the Investor Notes. See Note 3, “Fair Value Measures” for information regarding the fair value measurement and accounting of these liability warrants.

*Schottenfeld November 2019 Credit and Security Agreement*

On November 14, 2019, the Company entered into a credit and security agreement (the Schottenfeld CSA) with Schottenfeld Opportunities Fund II, L.P. and Phase Five Partners, LP (two investors affiliated with Schottenfeld Group Holdings LLC) to borrow an additional $7.9 million, resulting in net proceeds to the Company of $7.5 million after deduction of a 5% original issue discount, and to grant the Investor Notes a security interest in the collateral granted to the Investors under the Schottenfeld CSA (as described below). The loans accrue interest at 12% per annum, mature on the earlier to occur of (i) the closing of a $50 million or greater financing and (ii) January 15, 2020, and are secured by a perfected security interest in substantially all of the assets of the Company and the Subsidiary Guarantors, junior in payment priority to Foris and Naxyris subject to the Subordination Agreement among Foris, Naxyris and the Investors. In connection therewith, the Company issued to such investors warrants to purchase an aggregate of 2.0 million shares of common stock at an exercise price of $3.87 per share, with an exercise term of 2 years from issuance (the November 2019 Schottenfeld CSA Warrants). In connection with the warrant issuance, the Company will be required to pay the November 2019 Schottenfeld CSA Warrants holders and the September 2019 Investor Warrants holders a fee if the Company issues equity securities in connection with the $50 million or greater financing provision that have an issue, conversion or exercise price of less than $3.90 or $3.87 per share, respectively. In such case, the fee will be the difference between the exercise price of such warrants (i.e., $3.90 or

$3.87) and the issue, conversion or exercise price of the equity securities issued in the $50 million or greater financing, times the total number of warrants issued to such investors in November 2019 and September 2019. See Note 15, "Subsequent Events" for further information regarding the Company's failure to repay the $7.9 million loan by January 15, 2020.

The November 2019 Schottenfeld CSA Warrants had a $4.0 million fair value which was recorded as a derivative liability and a loss on debt extinguishment (as discussed below). See Note 3, "Fair Value Measures" for information regarding the fair value measurement and accounting of these liability warrants. Also, the Schottenfeld CSA also contained a mandatory redemption feature that was not clearly and closely related to the debt host instrument, and thus, required bifurcation and separate accounting as a derivative liability. The embedded feature had an initial fair value of $0.2 million and was recorded as a derivative liability and a debt discount to be amortized to interest expense under the effective interest method over the term of the Schottenfeld CSA (as discussed below). See Note 3, "Fair Value Measurement" for information regarding the fair value measurement and subsequent accounting for the embedded mandatory redemption feature.

Due to multiple changes in key provisions of Investor Credit Agreements and the Schottenfeld CSA, the Company analyzed the before and after cash flows resulting from the increased principal balance and the fair value of the new November 2019 Schottenfeld CSA Warrants to determine whether these changes result in a modification or extinguishment of the original Schottenfeld and Phase Five notes. Based on the combined before and after cash flows of each note, the change in cash flows was significantly different. Consequently, the Schottenfeld CSA was accounted for as a debt extinguishment and a new debt issuance. The Company recorded an $11.2 million loss upon extinguishment of debt, which was comprised of $6.8 million of unaccreted discount and the balance of the derivative liability recorded in connection with the previous debt instrument, the $4.0 million fair value of the November 2019 Schottenfeld CSA Warrant (as a non-cash fee paid to the lender), and a $0.4 million original issue discount that was netted against the Schottenfeld CSA loan proceeds.

In recording the new debt issuance, the Company also capitalized $0.2 million of legal fees related to the Schottenfeld CSA and the initial fair value of the mandatory redemption feature of $0.2 million was as a debt discount to be amortized to interest expense under the effective interest method over the term of the new debt issuance.

*DSM Credit Agreements—Related Party*

<u>DSM $25 Million Note</u>

In December 2017, the Company and DSM entered into a credit agreement (the DSM Credit Agreement) to make available to the Company an unsecured credit facility of $25.0 million. On December 28, 2017, the Company borrowed $25.0 million under the DSM Credit Agreement, representing the entire amount available thereunder, and issued a promissory note to DSM in an equal principal amount (the DSM Note). The Company used the proceeds of the amounts borrowed under the DSM Credit Agreement to repay all outstanding principal under a promissory note in the principal amount of $25.0 million issued to Guanfu Holding Co., Ltd. in December 2016 (the Guanfu Note). Given multiple elements in the arrangements with DSM, the Company fair valued the DSM Note to determine the arrangement consideration that should be allocated to the DSM Note. The fair value of the DSM Note was discounted using a Company specific weighted average cost of capital rate that resulted in a debt discount of $8.0 million. The debt discount is being amortized over the loan term using the effective interest method.

The DSM Note (i) is an unsecured obligation of the Company, (ii) matures on December 31, 2021 and (iii) accrues interest from and including December 28, 2017 at 10% per annum, payable quarterly. The DSM Note may be prepaid in full or in part at any time without penalty or premium. The DSM Credit Agreement and the DSM Note contain customary terms, covenants and restrictions, including certain events of default after which the DSM Note may become due and payable immediately.

<u>DSM $8 Million Note</u>

On September 17, 2019, the Company and DSM entered into a credit agreement (the 2019 DSM Credit Agreement) to make available to the Company a secured credit facility in an aggregate principal amount of $8.0 million, to be issued in separate installments of $3.0 million, $3.0 million and $2.0 million, respectively, with each installment being subject to certain closing conditions, including the payment of certain existing obligations of the Company to DSM. On September 17, 2019, the Company borrowed the first installment of $3.0 million under the 2019 DSM Credit Agreement, all of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $3.0 million. On September 19, 2019, the Company borrowed the second installment of $3.0 million under the 2019 DSM Credit Agreement, all of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $3.0 million. On September 23, 2019, the Company borrowed the final

installment of $2.0 million under the 2019 DSM Credit Agreement, $1.5 million of which proceeds were used to pay certain existing obligations of the Company to DSM, and issued to DSM a promissory note in the principal amount of $2.0 million. The promissory notes issued under the 2019 DSM Credit Agreement (i) mature on August 7, 2022, (ii) accrue interest at a rate of 12.5% per annum from and including the applicable date of issuance, which interest is payable quarterly in arrears on each January 1, April 1, July 1 and October 1, beginning January 1, 2020, and (iii) are secured by a first-priority lien on certain Company intellectual property licensed to DSM. The Company may at its option repay the amounts outstanding under the 2019 DSM Credit Agreement before the maturity date, in whole or in part, at a price equal to 100% of the amount being repaid plus accrued and unpaid interest on such amount to the date of repayment. In addition, the Company is required to repay the amounts outstanding under the 2019 DSM Credit Agreement (i) in an amount equal to the gross cash proceeds, if any, received by the Company upon the exercise by DSM of any of the common stock purchase warrants issued by the Company to DSM on May 11, 2017 or August 7, 2017 (see Note 6, "Stockholders' Deficit") and (ii) in full upon the request of DSM at any time following the receipt by the Company of at least $50.0 million of gross cash proceeds from one or more sales of equity securities of the Company on or prior to June 30, 2020. In connection with issuance of the 2019 DSM Credit Agreement, the Company incurred $0.3 million of legal fees which were recorded as a debt discount to be amortized as interest expense under the effective interest method over the term of the 2019 DSM Credit Agreement.

*Ginkgo Note, Partnership Agreement and Note Amendment*

In November 2017, the Company and Ginkgo Bioworks, Inc. (Ginkgo) entered into a partnership agreement (Ginkgo Partnership Agreement) to replace and supersede the 2016 Ginkgo Collaboration Agreement. Under the Ginkgo Partnership Agreement, the Company and Ginkgo agreed:

- to issue the $12 million November 2017 Ginkgo Note (as defined below), which effectively guarantees Ginkgo $12 million minimum future royalties under the profit margin sharing provisions noted below;
- to pay Ginkgo quarterly fees of $0.8 million (Partnership Payments) for a total of $12.7 million, beginning on December 31, 2018 and ending on September 30, 2022;
- to share profit margins from sales of a certain product to be developed under the Ginkgo Partnership Agreement on a 50/50 basis, subject to certain conditions, provided that net profits will be payable to Ginkgo for any quarterly period to the extent that such net profits exceed the sum of (a) quarterly interest payments due under the November 2017 Ginkgo Note and (b) Partnership Payments due in such quarter;
- to continue to collaborate on limited research and development; and
- to provide each other licenses (with royalties) to specified intellectual property for limited purposes.

The Ginkgo Partnership Agreement provides for an initial term of two years and will automatically renew for successive one-year terms thereafter unless otherwise terminated. The Company does not expect to recognize any future revenue under this arrangement.

The Company recorded the $6.1 million present value of the $12.7 million partnership payments in other liabilities (see Note 2, "Balance Sheet Details"), with the remaining $6.6 million recorded as a debt discount to be recognized as interest expense under the effective interest method over the five-year payment term. The Company also concluded the partnership payment obligation under the Ginkgo Partnership Agreement represents consideration payable to a former customer; and consequently, the present value of the partnership payments should be recorded as a reduction of cumulative revenue recognized to date from Ginkgo in the period the partnership agreement was executed. The Company reached a similar conclusion regarding the $12.0 million Ginkgo Note described below. In total, the Company recorded a $13.1 million reduction in licenses and royalties revenue and $13.1 million in notes payable and other liabilities as of and for the year ended December 31, 2017 upon execution of the Ginkgo Partnership Agreement.

In November 2017, the Company issued an unsecured promissory note in the principal amount of $12.0 million to Ginkgo (the November 2017 Ginkgo Note) in connection with the termination of the Ginkgo Collaboration Agreement and the execution of the Ginkgo Partnership Agreement. The November 2017 Ginkgo Note accrues interest at 10.5% per annum, payable monthly, and has a maturity date of October 19, 2022. The November 2017 Ginkgo Note may be prepaid in full without penalty or premium at any time, provided that certain payments have been made under the Company's partnership agreement with Ginkgo. The November 2017 Ginkgo Note also contains customary terms, covenants and restrictions, including certain events of default after which the note may become due and payable immediately. The Company recorded the $7.0 million present value of the November 2017 Ginkgo Note as a note payable liability, and the remaining $5.0 million was recorded as a debt discount which is being accreted to interest expense over the loan term using the effective interest method.

On September 29, 2019, in connection with Ginkgo granting certain waivers under the November 2017 Ginkgo Note and the Ginkgo Partnership Agreement, (i) the Company and Ginkgo amended the November 2017 Ginkgo Note to increase the

interest rate from 10.5% per annum to 12% per annum, beginning October 1, 2019, (ii) Ginkgo agreed to waive default interest, defer past due interest and partnership payments under the November 2017 Ginkgo Note and Ginkgo Partnership Agreement until December 15 and (iii) the Company agreed to pay a cash waiver fee of $1.3 million, payable in installments of $0.5 million on December 15, 2019 and $0.8 million on March 31, 2020. The Company accounted for this amendment as a modification and accrued the $1.3 million waiver fee in other current liabilities and a charge to interest expense during the year ended December 31, 2019. See Note 15, "Subsequent Events" for further information regarding the Company's failure to pay the $5.2 million past due interest, default interest on past due amounts, partnership payments and the $0.5 million waiver fee installment on December 15, 2019.

*6% Convertible Notes Due 2021*

In December 2018, the Company issued $60.0 million in aggregate principal amount of senior convertible notes (the 6% Convertible Notes Due 2021) for $56.2 million of net proceeds, after deducting offering expenses and placement agent and advisory fees.

The Company elected to account for the 6% Convertible Notes Due 2021 at fair value as of the issuance date. Management believes that the fair value option better reflects the underlying economics of the 6% Convertible Notes Due 2021, which contain multiple embedded derivatives. Under the fair value election, changes in fair value are reported in the consolidated statements of operations as "(Loss) gain from change in fair value of debt" in each reporting period subsequent to the issuance of the 6% Convertible Notes Due 2021.

In May, June and July 2019, the Company exchanged the 6% Convertible Notes Due 2021 for new senior convertible notes and warrants to purchase common stock. Since the Company elected the fair value accounting option for the 6% Convertible Notes and records all changes in fair value through (Loss) gain from change in fair value of debt in the consolidated statement of operations, this series of exchanges was not required to be evaluated for modification or extinguishment accounting treatment. However, the Company considered the issuance of the warrant in connection with these exchanges as compensation to the noteholders for waiving certain covenant violations during the period, and recorded a $5.3 million increase to additional paid in capital and a charge to interest expense for the fair value of the equity-classified May 15, 2019, June 24, 2019 and July 24, 2019 warrants. See Note 6, "Stockholders' Deficit" for information regarding the fair value measurement and issuance of this warrant.

On November 8, 2019, the Company entered into a Securities Exchange Agreement with certain private investors (the Investors), pursuant to which the Investors purchased the 6% Convertible Notes Due 2021 from the original holder and subsequently exchanged the 6% Convertible Notes Due 2021 with the Company for new 5% Senior Convertible Notes (the Senior Convertible Notes Due 2022) having an aggregate principal amount of $66.0 million. See the Senior Convertible Notes Due 2022 section below for further information on the exchange.

The Company evaluated the Investor's purchase of the 6% Convertible Notes Due 2021 from the original holder and subsequent exchange with the Company for the Senior Convertible Notes Due 2022 and determined the purchase and exchange met the criteria for extinguishment accounting. The Company recorded a $1.9 million loss of debt extinguishment as of December 31, 2019, determined as follows:

| ***In thousands*** | | |
|---|---|---|
| Fair value at December 31, 2018 | $ | 57,918 |
| Less: principal paid in cash during 2019 | | (13,395) |
| Less: principal converted to common stock during 2019 | | (15,000) |
| Loss on change in fair value during 2019 | | 18,303 |
| Accrued interest | | 3,168 |
| Carrying value of registration rights liability | | 5,757 |
| Net carrying value at extinguishment | | 56,751 |
| Total reacquisition price | | 58,640 |
| Loss on debt extinguishment | $ | 1,889 |

*Senior Convertible Notes Due 2022*

As discussed above under the 6% Convertible Notes Due 2021 section, on November 8, 2019, the Company entered into a securities exchange agreement with certain private investors (the Investors). The Investors completed the purchase of the Second Exchange Note from the current holder, and on November 15, 2019 the Company exchanged the 6% Convertible Notes Due 2021 held by the Investors for the Senior Convertible Notes Due 2022.

The Senior Convertible Notes Due 2022 are general unsecured obligations of the Company and will mature on September 30, 2022 unless earlier converted or redeemed.

The Senior Convertible Notes Due 2022 are payable in fixed monthly installments of $3.0 million from February 1, 2020 through July 1, 2020 and then $3.4 million monthly thereafter in either cash or, at the Company's option, subject to the satisfaction of certain equity conditions, in shares of common stock at a discount to the then-current market price, subject to a price floor. The holders have the right, upon notice to the Company, to defer all or any portion of any installment amount to a future installment date. Each installment payment will reduce the principal amount under the Senior Convertible Notes Due 2022 by 90% of the amount of such installment payment.

The Senior Convertible Notes Due 2022 accrue interest at a rate of 5% per annum, and is payable on each installment date. Interest on the Senior Convertible Notes Due 2022 may be paid in either cash or, at the Company's option, subject to the satisfaction of the equity conditions, shares of common stock at the installment conversion price. Upon the occurrence and during the continuation of an event of default, interest on the Senior Convertible Notes Due 2022 will accrue at a rate of 15% per annum.

The Company may at its option redeem the Senior Convertible Notes Due 2022, in full, at a price equal to 115% of the greater of (A) the principal amount of the Senior Convertible Notes Due 2022 being redeemed and (B) the intrinsic value of the shares of common stock underlying the principal amount of the Senior Convertible Notes Due 2022 being redeemed. In addition, the Company is required to (i) redeem the Senior Convertible Notes Due 2022 in an aggregate amount of $10.0 million following the receipt by the Company of at least $75.0 million of aggregate net cash proceeds from one or more financing transactions, at a price equal to 110% of the amount being redeemed and (ii) redeem the Senior Convertible Notes Due 2022 in an aggregate amount of $10.0 million on December 31, 2019, at a price equal to 110% of the amount being redeemed, in each case unless such redemption is deferred by the holder, and (iii) raise aggregate net cash proceeds of $30 million by December 31, 2019 and an additional $75 million by March 15, 2020 from one or more financing transactions by January 31, 2020. See Note 15, "Subsequent Events" for further information regarding the Company's failure to redeem $10 million of the Senior Convertible Notes Due 2022 and raise aggregate cash proceeds of $30 million on or by December 31, 2019 and a description of an amendment to certain other redemption provisions in the Senior Convertible Notes Due 2022.

The Senior Convertible Notes Due 2022 are convertible from time to time, at the election of the holders, into shares of common stock at an initial conversion price of $5.00 per share. The conversion price is subject to adjustment in the event of any stock split, reverse stock split, recapitalization, reorganization or similar transaction.

The Senior Convertible Notes Due 2022 contain customary terms and covenants, including (i) a restriction on the Company's ability to incur additional indebtedness, (ii) covenants related to minimum revenue, minimum liquidity, financing activity and the conversion or exchange of existing indebtedness into equity, (iii) certain events of default, after which the holders may (A) require the Company to redeem all or any portion of their Senior Convertible Notes Due 2022 in cash at a price equal to 115% of the amount being redeemed and (B) convert all or any portion of their Senior Convertible Notes Due 2022 at a discount to the Installment conversion price and (iv) certain other events, after which the holders may convert all or any portion of their Senior Convertible Notes Due 2022 at a discount to the conversion price. See Note 15, "Subsequent Events" for further information regarding the amendment to certain conversion provisions in the Senior Convertible Notes Due 2022.

Notwithstanding the foregoing, the holders do not have the right to convert any portion of a New Note, and the Company does not have the option to pay any amount under the Senior Convertible Notes Due 2022 in shares of common stock, if (a) the holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of common stock outstanding immediately after giving effect to such conversion or payment, as applicable (the Ownership Limitation) or (b) the aggregate number of shares issued with respect to the Senior Convertible Notes Due 2022 (and any other transaction aggregated for such purpose) after giving effect to such conversion or payment, as applicable, would exceed the limitation imposed by Nasdaq Listing Standard Rule 5635(d) (the Exchange Cap), unless Stockholder Approval (as defined below) has been obtained. In the event that (i) the Company is prohibited from issuing any shares of common stock under the Senior Convertible Notes Due 2022 as a result of the Ownership Limitation (other than in connection with a conversion of Senior Convertible Notes Due 2022), the related principal amount of the Senior Convertible Notes Due 2022 shall be deferred to a future installment date as determined by the holder, and (ii) after January 31, 2020, the Company is prohibited from issuing

any shares of common stock under the Senior Convertible Notes Due 2022 as a result of the Exchange Cap, the Company will pay cash in lieu of any shares that would otherwise be deliverable in excess of the Exchange Cap.

Pursuant to the Senior Convertible Notes Due 2022, the Company agreed to use commercially reasonable efforts to obtain from the Company's stockholders the approval contemplated by Nasdaq Listing Standard Rule 5635(d) with respect to the issuance of shares of common stock upon conversion of, or otherwise pursuant to, the Senior Convertible Notes Due 2022 in excess of the limitation imposed by such rule, including without limitation the issuance of shares of common stock upon conversion of, or otherwise pursuant to, the Senior Convertible Notes Due 2022 in excess of the Exchange Cap (the Stockholder Approval), at an annual or special meeting of stockholders to be held on or prior to January 31, 2020. Pursuant to the Senior Convertible Notes Due 2022, if the Company does not obtain the Stockholder Approval by January 31, 2020, the Company will use best efforts to obtain the Stockholder Approval thereafter. See Note 15, "Subsequent Events" for further information regarding the amendment, forbearance and waiver to certain provisions in the Senior Convertible Notes Due 2022, including the deadline for the Company to seek the Stockholder Approval.

The Company has elected to account for the Senior Convertible Notes Due 2022 at fair value, as of the issuance date. Management believes that the fair value option better reflects the underlying economics of the Senior Convertible Notes Due 2022, which contain multiple embedded derivatives. Under the fair value election, changes in fair value will be reported in the consolidated statements of operations as "Gain (loss) from change in fair value of debt" in each reporting period subsequent to the issuance of the Senior Convertible Notes Due 2022. For the year ended December 31, 2019, the Company recorded a gain of $3.8 million, which is shown as Fair Value Adjustment in the table at the beginning of this Note 4. See Note 3, "Fair Value Measurement" for information about the assumptions that the Company used to measure the fair value of the Senior Convertible Notes Due 2022.

*Nikko Loan Agreements and Notes*

The loans payable to Nikko Chemicals Co., Ltd. at December 31, 2019 are comprised of the following (amounts in thousands):

| Description | Date Issued | Original Loan Amount | Balance at December 31, 2019 | Interest Rate per Annum | Maturity Date |
|---|---|---|---|---|---|
| Nikko $5.0M Note | July 29, 2019 | $ 5,000 | $ 5,000 | 5.00% | December 18, 2020 |
| Nikko $4.5M Note | December 19, 2019 | 4,500 | 4,500 | 2.75% | January 31, 2020 |
| Nikko $3.9M Note | December 19, 2016 | 3,900 | 2,862 | 5.00% | December 1, 2029 |
| Nikko $1.5M Note B | August 3, 2017 | 1,500 | 900 | 2.75% | August 1, 2020 |
| Nikko $450K Note | December 9, 2019 | 450 | 450 | 2.75% | March 31, 2020 |
| Nikko $350K Note | November 20, 2019 | 350 | 350 | 2.75% | January 31, 2020 |
| Nikko $200K Capex | February 1, 2019 | 200 | 171 | 5.00% | January 1, 2026 |
| Nikko $500K Note | October 31, 2019 | 500 | 84 | 2.75% | January 10, 2020 |
| | | $ 16,400 | $ 14,317 | | |

Nikko Loan Agreements

On July 29, 2019, the Company and Nikko entered into a loan agreement (the Nikko Loan Agreement) to make available to the Company secured loans in an aggregate principal amount of $5.0 million, to be issued in separate installments of $3.0 million and $2.0 million, respectively. On July 30, 2019, the Company borrowed the first installment of $3.0 million under the Nikko Loan Agreement and received net cash proceeds of $2.8 million, with the remaining $0.2 million being withheld by Nikko as prepayment of the interest payable on such loan through the maturity date. On August 8, 2019, the Company borrowed the remaining $2.0 million available under the Nikko Loan Agreement and received net cash proceeds of $1.9 million, with the remaining $0.1 million being withheld by Nikko as prepayment of the interest payable on such loan through the maturity date. The loans (i) mature on December 18, 2020, (ii) accrue interest at a rate of 5% per annum from and including the applicable loan date through the maturity date, which interest is required to be prepaid in full on the date of the applicable loan, and (iii) are secured by a first-priority lien on 12.8% of the Aprinnova JV interests owned by the Company.

On December 19, 2019, the Company borrowed $4.5 million from Nikko under a second secured loan agreement. The loan (i) matures on January 31, 2020, (ii) accrues interest at a rate of 2.75% per annum, and (iii) is secured by a first-priority lien on 27.2% of the Aprinnova JV interests owned by the Company. See Note 15, "Subsequent Events" for further information regarding the Company's failure to pay the $4.5 million loan on January 31, 2020.

Nikko Notes

*Facility Note:* In December 2016, in connection with the Company's formation of its cosmetics joint venture (the Aprinnova JV) with Nikko Chemicals Co., Ltd. (Nikko), Nikko made a loan to the Company in the principal amount of $3.9 million and the Company issued a promissory note (the Nikko Note) to Nikko in an equal principal amount. The proceeds of the Nikko Note were used to satisfy the Company's remaining liabilities related to the Company's purchase of a manufacturing facility in Leland, North Carolina and related assets in December 2016, including liabilities under a promissory note in the principal amount of $3.5 million issued in connection therewith. The Nikko Note (i) accrues interest at 5% per year, (ii) has a term of 13 years, (iii) is payable in equal monthly installments of principal and interest beginning on January 1, 2017 and (iv) is secured by a first-priority lien on 10% of the Aprinnova JV interests owned by the Company. In addition, the Company is required to repay the Nikko Note with any profits distributed to the Company by the Aprinnova JV, beginning with the distributions for the fourth fiscal year of the Aprinnova JV, until the Nikko Note is fully repaid. The Nikko Note may be prepaid in full or in part at any time without penalty or premium. The Nikko Note contains customary terms and provisions, including certain events of default after which the Nikko Note may become due and payable immediately.

*Aprinnova JV Working Capital Notes:* In February 2017, in connection with the formation of the Aprinnova JV in December 2016, Nikko made a working capital loan to the Aprinnova JV in the principal amount of $1.5 million (the First Aprinnova Note). The First Aprinnova Note was fully repaid in January 2018. In August 2017, Nikko made a second working capital loan to the Aprinnova JV in the principal amount of $1.5 million (the Second Aprinnova Note). The Second Aprinnova Note was payable in full on August 1, 2019, with interest payable quarterly. Both notes accrue interest at 2.75% per annum. Effective July 31, 2019, the Company repaid $500,000 and agreed with Nikko to extend the term of the Second Aprinnova Note to August 1, 2020. Under the terms of the extension, the Company is required to make four quarterly principal payments of $100,000 each beginning November 1, 2019 through May 1, 2020 and a final payment of $700,000 at August 1, 2020 maturity.

*Aprinnova JV Palladium Notes:* In October, November and December 2019, Nikko advanced Aprinnova JV a total of $1.3 million under three separate promissory notes to purchase a palladium catalyst used in the manufacturing process at the Leland facility. These short-term notes accrue interest at 2.75% per annum and mature between January 10, 2020 and March 31, 2020. As of February 28, 2020, the total $1.3 million of note balances has been fully repaid in cash and are no longer outstanding.

*Aprinnova JV CapEx Note:* On February 1, 2019, the Aprinnova JV and Nikko agreed to fund Nikko's $0.2 million share of the joint venture's 2018 capital expenditures through an unsecured seven-year promissory note (the 2018 CapEx Note). The 2018 CapEx note (i) requires quarterly principal payments of $7,200 beginning April 1, 2019, (ii) accrues 5% simple interest per annum, and (iii) matures on January 1, 2026.

***Letters of Credit***

In June 2012, the Company entered into a letter of credit agreement for $1.0 million under which it provided a letter of credit to the landlord for its headquarters in Emeryville, California in order to cover the security deposit on the lease. This letter of credit is secured by a certificate of deposit. Accordingly, the Company has $1.0 million of restricted cash, noncurrent in connection with this arrangement as of December 31, 2019 and 2018.

**5. Mezzanine Equity**

Mezzanine equity at December 31, 2019 and 2018 is comprised of proceeds from common shares sold on May 10, 2016 to the Bill & Melinda Gates Foundation (the Gates Foundation). On April 8, 2016, the Company entered into a Securities Purchase Agreement with the Gates Foundation, pursuant to which the Company agreed to sell and issue 292,398 shares of its common stock to the Gates Foundation in a private placement at a purchase price per share of $17.10, the average of the daily closing price per share of the Company's common stock on the Nasdaq Stock Market for the twenty consecutive trading days ending on April 7, 2016, for aggregate proceeds to the Company of approximately $5.0 million (the Gates Foundation Investment). The Securities Purchase Agreement includes customary representations, warranties and covenants of the parties.

In connection with the entry into the Securities Purchase Agreement, on April 8, 2016, the Company and the Gates Foundation entered into a Charitable Purposes Letter Agreement, pursuant to which the Company agreed to expend an aggregate amount not less than the amount of the Gates Foundation Investment to develop a yeast strain that produces artemisinic acid and/or amorphadiene at a low cost and to supply such artemisinic acid and amorphadiene to companies qualified to convert artemisinic acid and amorphadiene to artemisinin for inclusion in artemisinin combination therapies used to treat malaria commencing in 2017. The Company is currently conducting the project. If the Company defaults in its obligation to use the proceeds from the Gates Foundation Investment as set forth above or defaults under certain other commitments in the Charitable Purposes Letter Agreement, the Gates Foundation will have the right to request that the Company redeem, or facilitate the purchase by a third party of, the Gates Foundation Investment shares then held by the Gates Foundation at a price per share equal to the greater of (i) the closing price of the Company's common stock on the trading day prior to the redemption or purchase, as applicable, or (ii) an amount equal to $17.10 plus a compounded annual return of 10%. As of December 31, 2019, the Company's remaining research and development obligation under this arrangement was $0.4 million.

**6. Stockholders' Deficit**

***Shares Issuable under Convertible Notes and Convertible Preferred Stock***

In connection with various debt transactions (see Note 4, "Debt"), the Company issued certain convertible notes and preferred shares that are convertible into shares of common stock as follows as of December 31, 2019, at any time at the election of each debtholder:

| | Number of Shares Instrument Is Convertible into as of December 31, 2019 |
|---|---|
| Senior convertible notes due 2022 | 13,200,000 |
| 2014 Rule 144A convertible notes | 181,238 |
| Series D preferred stock (8,280 shares outstanding at December 31, 2019) | 1,943,661 |
| | 15,324,899 |

***2014 Rule 144A Convertible Notes Exchanges***

On May 10, 2019, the Company exchanged $13.5 million aggregate principal amount of the 2014 Rule 144A Convertible Notes held by certain non-affiliated investors, including accrued and unpaid interest thereon, for an aggregate of 3.5 million shares of common stock and warrants to purchase an aggregate of 1.4 million shares of common stock at an exercise price of $5.02 per share, with an exercise term of two years from issuance, in a private exchange.

On May 14, 2019, the Company exchanged $5.0 million aggregate principal amount of the 2014 Rule 144A Convertible Notes held by Foris, including accrued and unpaid interest thereon, for 1.1 million shares of common stock and a warrant to purchase up to 0.4 million shares of common stock at an exercise price of $4.56 per share, with an exercise term of two years from issuance, in a private exchange. On August 28, 2019, the Company and Foris agreed to reduce the exercise price of such warrant from $4.56 per share to $3.90 per share. See "August 2019 Foris Warrant Issuance" below for additional information and Note 15, "Subsequent Events" for information regarding the amendment and exercise of the warrants on January 31, 2020.

On May 15, 2019, the Company exchanged $10.0 million aggregate principal amount of the 2014 Rule 144A Convertible Notes held by Maxwell (Mauritius) Pte Ltd for 2.5 million shares of common stock in a private exchange.

The Company issued 7.1 million shares of common stock with a fair value totaling $30.8 million based on the Company's closing stock price at the date of each exchange upon exchange of the 2014 Rule 144A Convertible Notes described above. The Company also issued warrants (collectively, the May 2019 6.50% Note Exchange warrant) to purchase a total of 1.7 million

shares of common stock with a fair value of $3.8 million. The Company concluded the warrants are freestanding instruments that are legally detachable and separately exercisable from the convertible notes and will be classified in equity as the warrants are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrants within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrants were measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $4.27 - $4.54, strike price $4.56 - $5.02, volatility 96%, risk-free interest rate 2.20% - 2.26%, and expected dividend yield 0%. The warrant had a fair value of $5.9 million that was recorded as a loss of debt extinguishment. See Note 4, "Debt" for information about the accounting treatment for this debt exchange and related fair value of the warrant.

The exercise price of the warrants issued in the foregoing exchanges is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month anniversary of the exercisability of the applicable warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, (i) the exercisability of the warrant issued to Foris is subject to stockholder approval in accordance with Nasdaq rules and regulations, which the Company is seeking at its 2019 annual meeting of stockholders, and (ii) each other warrant provides that the Company may not affect any exercise of such warrant to the extent that, after giving effect to such exercise, the applicable holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of common stock outstanding after giving effect to such exercise.

***August 2013 Financing Convertible Note Conversion into Equity***

On July 8, 2019, Wolverine exchanged $5.1 million principal and accrued and unpaid interest related to its August 2013 Financing Convertible Note for 1.8 million shares of common stock and a warrant (the July 2019 Wolverine Warrant) to purchase 1.1 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. The common stock had a fair value of $5.9 million or $3.30 per share and the warrant had a fair value of $1.9 million. The Company concluded the warrant is a freestanding instrument that is legally detachable and separately exercisable from the convertible note and will be classified in equity, as the warrant is both indexed to the Company's own stock and meets the equity classification criteria. As such, the Company will account for the fair value of the warrant within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrant to be reclassified to an asset or liability. The fair value of the warrant was measured using the Black-Scholes-Merton option pricing model, with the following parameters: stock price $3.33, strike price $2.87, volatility 94%, risk-free interest rate 1.88%, and expected dividend yield 0%. The resulting $1.9 million fair value was recorded as a loss of debt extinguishment. See Note 4, "Debt" for additional information regarding the loss on debt extinguishment.

***Pre-Delivery Shares Issued with Senior Convertible Notes Due 2022***

In connection with the issuance of the Senior Convertible Notes Due 2022 on November 15, 2019, the Company issued 7.5 million shares of common stock (the Pre-Delivery Shares) to the note holders which are freely tradeable, validly issued, fully paid, nonassessable and free from all preemptive or similar rights or liens, for the note holders to sell, trade or hold, subject to certain limitations, for as long as the Senior Convertible Notes Due 2022 are outstanding. The issuance of these shares resulted in no cash proceeds to the Company. However, the Company may elect or be required to apply some or all of the value of the pre-delivered shares to satisfy periodic principal and interest payments or other repayment events. If the Pre-Delivery Shares are used in satisfaction of a payment(s) due under the Senior Convertible Notes Due 2022, the Company must provide additional shares of common stock to the note holders in order to maintain a 7.5 million share balance on deposit with the holder. The Holder will not (A) loan any Pre-Delivery shares to any third party, (B) prior to February 1, 2020 sell or otherwise transfer or dispose of any Pre-Delivery Shares to any unaffiliated third party and (C) on or after February 1, 2020 sell or otherwise transfer or dispose of any Pre-Delivery Shares to any unaffiliated third party if the amount of such sales, transfers or dispositions on any day would exceed 10% of the composite trading volume (as reported on Bloomberg) of the Common Stock on such day. Within ten business days following redemption or repayment of in full the Senior Convertible Notes Due 2022 and the satisfaction or discharge by the Company of all outstanding Company obligations hereunder, the Holder shall deliver 7.5 million shares of the Company's common stock to the Company.

The Company concluded the Pre-Delivery Shares provision is a freestanding instrument that is legally detachable and separately exercisable from the Senior Convertible Notes Due 2022 and will be classified in equity as the common shares issued is both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the Pre-Delivery Shares within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the shares to be reclassified to an asset or liability. The Company measured the issue date fair value of the Pre-Delivery Shares under an expected borrowing cost approach using a 9.75% annual

borrowing rate over an 18-month estimated repayment term for the Senior Convertible Notes Due 2022. The resulting $4.2 million fair value was recorded in equity as additional paid in capital with an offset to the fair value of the Senior Convertible Notes Due 2022. See Note 3, "Fair Value Measurements" for further information regarding the fair value measurement and accounting for this freestanding instrument.

***Series B Preferred Stock Beneficial Ownership Limitation***

On October 24, 2019, the Company filed a certificate of amendment (the Certificate of Amendment) to the Certificate of Designation (the Certificate of Designation) relating to the Company's Series B 17.38% Convertible Preferred Stock, par value $0.0001 per share (the Series B Preferred Stock), with the Secretary of State of Delaware. The Company had originally filed the Certificate of Designation on May 8, 2017, pursuant to which the conversion of the Series B Preferred Stock was subject to a beneficial ownership limitation of 4.99%, or such other percentage as determined by the holder, not to exceed 9.99% of the number of shares of the Company's common stock outstanding after giving effect to such conversion (the Beneficial Ownership Limitation). In addition, pursuant to the Certificate of Designation, each share of Series B Preferred Stock automatically converted on October 9, 2017, subject to the Beneficial Ownership Limitation.

Pursuant to the Certificate of Amendment, the Beneficial Ownership Limitation was eliminated, permitting the conversion of any outstanding shares of Series B Preferred Stock, the conversion of which was previously prevented by the Beneficial Ownership Limitation. As such, on October 24, 2019, the remaining 6,376.28 shares of Series B Preferred Stock, which were all held by Foris, automatically converted into 1.0 million shares of the Company's common stock.

***April 2019 Private Placements***

On April 16, 2019, the Company sold and issued to Foris 6.7 million shares of common stock at a price of $2.87 per share, for aggregate proceeds to the Company of $20.0 million (the Foris Investment), as well as a warrant (the April 2019 Foris Warrant) to purchase up to 5.4 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance, in a private placement, for aggregate cash proceeds to the Company of $20.0 million. The Company evaluated the warrants for derivative liability treatment and concluded that the instruments met the indexation criteria to be accounted for in equity.

On April 26, 2019, the Company sold and issued (i) 2.8 million shares of common stock at a price of $5.12 per share, as well as a warrant (the April 2019 PIPE Warrants) to purchase up to 4.0 million shares of common stock at an exercise price of $5.12 per share, with an exercise term of two years from issuance, to Foris and (ii) an aggregate of 2.0 million shares of common stock at a price of $4.02 per share, as well as warrants (the April 2019 PIPE Warrants) to purchase up to an aggregate of 1.6 million shares of common stock at an exercise price of $5.02 per share, with an exercise term of two years from issuance, to certain other non-affiliated investors, in each case in private, for aggregate cash proceeds to the Company of $15.0 million from Foris and $8.2 million from non-affiliated investors, for a total of $23.2 million. The Company evaluated the warrants for derivative liability treatment and concluded that the instruments met the indexation criteria to be accounted for in equity.

On April 29, 2019, the Company sold and issued (i) 0.9 million shares of common stock at a price of $4.76 per share, as well as warrants (the April 2019 PIPE Warrants) to purchase up to an aggregate of 1.2 million shares of common stock at an exercise price of $4.76 per share, with an exercise term of two years from issuance, to affiliates of Vivo Capital LLC (Vivo), an entity affiliated with director Frank Kung and which owns greater than five percent of our outstanding common stock and has the right to designate one member of the Company's Board of Directors) and (ii) an aggregate of 0.3 million shares of common stock at a price of $4.02 per share, as well as warrants (the April 2019 PIPE Warrants) to purchase up to an aggregate of 0.3 million shares of common stock at an exercise price of $5.02 per share, with an exercise term of two years from issuance, to certain other non-affiliated investors, in each case in private placements, for aggregate cash proceeds to the Company of $4.5 million from Vivo and $1.3 million from non-affiliated investors, for a total of $5.8 million. The Company evaluated the warrants for derivative liability treatment and concluded that the instruments met the indexation criteria to be accounted for in equity.

On May 3, 2019, the Company sold and issued 1.2 million shares of common stock at a price of $4.02 per share, as well as a warrant (the April 2019 PIPE Warrants) to purchase up to 1.0 million shares of common stock at an exercise price of $5.02 per share, with an exercise term of two years from issuance, to a non-affiliated investor in a private placement, for aggregate cash proceeds to the Company of $5.0 million. The Company evaluated the warrants for derivative liability treatment and concluded that the instruments met the indexation criteria to be accounted for in equity.

The exercise price of the warrants issued in the foregoing private placements is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month

anniversary of issuance of the applicable warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, in connection with the foregoing private placements, the Company agreed not to effect any exercise or conversion of any Company security, and the investors agreed not to exercise or convert any portion of any Company security, to the extent that after giving effect to such exercise or conversion, the applicable investor, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding immediately after giving effect to such exercise or conversion, and the warrant contained a similar limitation. The Company obtained stockholder approval for Foris to exceed such limitation in accordance with Nasdaq rules and regulations at its annual meeting of stockholders on November 19, 2019.

See Note 15, "Subsequent Events" for information regarding the amendment and exercise of certain April 2019 PIPE Warrants on January 31, 2020.

***November 2018 DSM Securities Purchase Agreement – Related Party***

On November 20, 2018, the Company issued 1,643,991 shares of common stock (the DSM Shares) at $3.68 per share to DSM in a private placement pursuant to a securities purchase agreement, dated November 19, 2018, between the Company and DSM (the DSM SPA), in consideration of certain agreements of DSM set forth in the Supply Agreement Amendment described in Note 9, "Revenue Recognition". The Company also agreed to pay DSM the difference between the DSM SPA purchase price of $4.41 and the closing share price of the Company's common stock on March 28, 2019, multiplied by 1,643,991 million. At inception, the Company recorded a $1.2 million derivative liability for the difference between $4.41 and the Company's closing stock price on November 20, 2018. At December 31, 2018 fair value based on the Company's closing stock price was $1.8 million, resulting in a $0.6 million loss from change in fair value of derivative instruments for the year ended December 31, 2018. At March 28, 2019, the Company's stock price was $2.10, and the Company owed DSM $3.8 million in connection with this agreement. Pursuant to the DSM SPA, the Company agreed to file a registration statement providing for the resale by DSM of the DSM Shares and to use commercially reasonable efforts to (i) cause such registration statement to become effective within 181 days following the date of the DSM SPA and (ii) keep such registration statement effective until DSM does not own any DSM Shares or the DSM Shares are eligible for resale under Rule 144 without regard to volume limitations. See Note 10, "Related Party Transactions" for additional information about the accounting for this transaction and other November 2018 transactions with DSM. In April 2019, in connection with the assignment by the Company of its rights under the Value Sharing Agreement (see Note 9, "Revenue Recognition"), the Company satisfied its obligation under the Supply Agreement Amendment relating to the difference between $4.41 and the price of the Company's common stock on March 28, 2019.

***Warrants***

The Company issues warrants in certain debt and equity transactions in order to facilitate raising equity capital or reduce borrowing costs. In connection with various debt and equity transactions (see Note 4, "Debt" and below), the Company has issued warrants exercisable for shares of common stock. The following table summarizes warrant activity for the year ended December 31, 2019:

| Transaction | Year Issued | Expiration Date | Number Outstanding as of December 31, 2018 | Additional Warrants Issued | Exercises | Expiration | Exercise Price per Share of Warrants Exercised | Number Outstanding as of December 31, 2019 | Exercise Price per Share as of December 31, 2019 |
|---|---|---|---|---|---|---|---|---|---|
| Foris LSA warrants | 2019 | August 14, 2021 | — | 3,438,829 | — | — | $ — | 3,438,829 | $2.87 |
| November 2019 Foris warrant | 2019 | November 27, 2021 | — | 1,000,000 | — | — | $ — | 1,000,000 | $3.87 |
| August 2019 Foris warrant | 2019 | August 28, 2021 | — | 4,871,795 | — | — | $ — | 4,871,795 | $3.90 |
| April 2019 PIPE warrants | 2019 | April 6, 2021, April 29, 2021 and May 3, 2021 | — | 8,084,770 | — | — | $ — | 8,084,770 | $3.90/$4.76/ $5.02 |
| April 2019 Foris warrant | 2019 | April 16, 2021 | — | 5,424,804 | — | — | $ — | 5,424,804 | $2.87 |
| September and November 2019 Investor Credit Agreement warrants | 2019 | September 10, 2021 and November 14, 2021 | — | 5,233,551 | — | — | $ — | 5,233,551 | $3.87/$3.90 |
| Naxyris LSA warrants | 2019 | October 28, 2021 | — | 2,000,000 | — | — | $ — | 2,000,000 | $2.87 |
| October 2019 Naxyris warrant | 2019 | October 28, 2021 | — | 2,000,000 | — | — | $ — | 2,000,000 | $3.87 |
| May-June 2019 6% Note Exchange warrants | 2019 | May 15, 2021 and June 24, 2021 | — | 2,181,818 | — | — | $ — | 2,181,818 | $2.87/$5.12 |
| May 2019 6.50% Note Exchange warrants | 2019 | May 10, 2021 and May 14, 2021 | — | 1,744,241 | — | — | $ — | 1,744,241 | $3.90/$5.02 |
| July 2019 Wolverine warrant | 2019 | July 8, 2021 | — | 1,080,000 | — | — | $ — | 1,080,000 | $2.87 |
| August 2018 warrant exercise agreements | 2018 | May 17, 2020 and May 20, 2020 | 12,097,164 | — | — | — | $ — | 12,097,164 | $2.87/$7.52 |
| April 2018 warrant exercise agreements | 2018 | July 12, 2019 | 3,616,174 | — | — | (3,616,174) | $ — | — | $ — |
| May 2017 cash warrants | 2017 | July 10, 2022 | 6,244,820 | — | (166,664) | — | $ 2.87000 | 6,078,156 | $2.87 |
| August 2017 cash warrants | 2017 | August 7, 2022 | 3,968,116 | — | — | — | $ 0.00015 | 3,968,116 | $2.87 |
| May 2017 dilution warrants | 2017 | July 10, 2022 | 47,978 | 4,795,924 | (1,758,009) | — | $ 0.00015 | 3,085,893 | $0.0015 |
| August 2017 dilution warrants | 2017 | May 23, 2023 | — | 3,028,983 | — | — | $ — | 3,028,983 | $0.0001 |
| February 2016 related party private placement | 2016 | February 12, 2021 | 171,429 | — | — | — | $ — | 171,429 | $0.15 |
| July 2015 related party debt exchange | 2015 | July 29, 2020 and July 29, 2025 | 133,334 | — | — | — | $ — | 133,334 | $0.15 |
| July 2015 private placement | 2015 | July 29, 2020 | 81,197 | — | (8,547) | — | $ 0.15000 | 72,650 | $0.15 |
| July 2015 related party debt exchange | 2015 | July 29, 2020 | 58,690 | — | — | — | $ — | 58,690 | $0.15 |
| July 2015 related party debt exchange | 2015 | July 29, 2020 | 471,204 | 245,558 | (716,762) | — | $ 0.15000 | — | $ — |
| Other | 2011 | December 23, 2021 | 1,406 | — | — | — | $ — | 1,406 | $160.05 |
| | | | 26,891,512 | 45,130,273 | (2,649,982) | (3,616,174) | $ 0.22166 | 65,755,629 | |

For information regarding warrants issued or exercised subsequent to December 31, 2019, see Note 15, "Subsequent Events".

Due to certain down-round adjustments to other equity-related instruments during the year ended December 31, 2019, approximately 8.1 million shares became available under the May 2017 and August 2017 dilution warrants and the Temasek Funding Warrant (July 2015 related party debt exchange warrant in the table above). Approximately 2.6 million shares were exercised under the May 2017 cash and dilution warrants and the Temasek Funding Warrant during the year ended December 31, 2019 and resulted in zero proceeds to the Company. Also, a portion of the warrant exercises occurring during 2019 was net share settled, and as a result only 2.5 million shares were legally issued upon exercise of warrants during the year ended December 31, 2019.

***Warrant Issuances, Exercises and Modifications in the Year Ended December 31, 2019***

*July 2019 Foris Credit Agreement Warrant Modification*

In connection with the entry into the July Foris Credit Agreement on July 10, 2019 (see Note 4, "Debt"), the Company and Foris amended a warrant to purchase up to 4.9 million shares of common stock issued to Foris on August 17, 2018 to reduce the exercise price of such warrant from $7.52 per share to $2.87 per share. The warrant modification was measured on a before and after modification basis using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.21, strike price $2.87, volatility 124%, risk-free interest rate 1.82%, term 0.9 years, and expected dividend yield 0%. The warrant had an incremental fair value of $4.0 million, which was accounted for as an increase to additional paid in capital and a debt discount to the $16 million July Foris Notes. See Note 4, "Debt" for additional information regarding the debt discount recorded in connection with the modification of the warrant.

*6% Convertible Note Exchange Warrants and Modification*

In connection with the May 15, 2019 and June 24, 2019 6% Convertible Note Exchanges (see Note 4, "Debt"), the Company issued warrants (the May-June 2019 6% Note Exchange Warrants) to purchase up to 2.0 million and 0.2 million shares of common stock, respectively, at an exercise price of $5.12 per share, with an exercise term of two years from issuance.

The exercise price of the warrant is subject to standard adjustments but does not contain any anti-dilution protection, and the warrant only permit "cashless" or "net" exercise after the six-month anniversary of issuance, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the warrant. The holders may not exercise the warrants, and the Company may not affect any exercise of the warrants, to the extent that, after giving effect to such exercise, the applicable holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of common stock outstanding after giving effect to such exercise.

The Company concluded the warrants are freestanding instruments that are legally detachable and separately exercisable from the convertible notes and should be classified in equity as the warrants are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrants within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The fair value of the warrants totaled $4.4 million and were measured using the Black-Scholes-Merton option pricing model with the following parameters: 94% - 96% volatility, 1.72% - 2.16% risk-free interest rate, $3.55 - $4.39 issuance-date stock price, term 2.0 years, and 0% expected dividend yield. The Company concluded that the $4.4 million fair value of the equity-classified May 15, 2019 and June 24, 2019 warrants should be recorded as an increase to additional paid in capital and a charge to interest expense in the statement of operations at the date of issuance. See Note 4, "Debt" for additional information regarding the accounting for the fair value of these warrants.

Further, on July 24, 2019, Company exchanged the May 15, 2019 warrant to purchase up to 2.0 million shares of common stock, for a new warrant to purchase up to 2.0 million shares of common stock at an exercise price of $2.87 per share, with an exercise term of two years from May 15, 2019. The exchange warrant has substantially identical terms as the original warrant issued on May 15, 2019, except that the exercise price was reduced from $5.12 to $2.87 per share. The warrant modification was measured on a before and after modification basis using the Black-Scholes-Merton option pricing model with the following parameters: strike price $2.87, volatility 93%, risk-free interest rate 1.86%, term 1.8 years, and expected dividend yield 0%; and resulted in $0.9 million of incremental fair value. The Company concluded that the increase in the fair value of the exchange warrant should be recorded as an increase to additional paid in capital and a charge to interest expense in the statement of operations at the date of modification. See Note 4, "Debt" for additional information regarding the charge to interest expense in connection with the fair value of this warrant.

*Foris LSA Warrant Issuances*

In connection with the entry into the LSA Amendment and Waiver (see Note 4, "Debt"), on August 14, 2019 the Company issued to Foris a warrant (the Foris LSA Warrant) to purchase up to 1.4 million shares of Common Stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. The exercise price of the warrant is subject to standard adjustments but does not contain any anti-dilution protection, and the warrant only permit "cashless" or "net" exercise after the six-month anniversary of issuance, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the warrant. Pursuant to the terms of the warrant, Foris may not exercise the LSA Warrant to the extent that, after giving effect to such exercise, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding after giving effect to such exercise, unless the Company has obtained stockholder approval to exceed such limit in accordance with Nasdaq rules and regulations, which the Company obtained at its 2019 annual meeting of stockholders on November 19, 2019.

The Company concluded the warrant is a freestanding instrument that is legally detachable and separately exercisable from the LSA Amendment and Waiver and will be classified in equity as the warrant is both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrant within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrant was measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.59, strike price $2.87, volatility 94%, risk-free interest rate 1.58%, term 2.0 years, and expected dividend yield 0%. The warrant had a fair value of $2.9 million which was recorded as an increase to additional paid in capital and as a debt discount to be amortized to interest expense under the effective interest method over the remaining term of the LSA. See Note 4, "Debt" for further information regarding the accounting treatment for the fair value of this warrant.

In connection with October 2019 LSA Amendment (see Note 4, "Debt"), on October 10, 2019, the Company issued a warrant (the October 2019 Foris LSA Warrant) to purchase 2.0 million shares of common stock, at an exercise price of $2.87 per share, with an exercise term of two years from issuance. Also, in connection with additional borrowings under the October 28, 2019 A&R LSA, on November 27, 2019, the Company issued a warrant (the November 2019 Foris Warrant) to purchase 1.0 million shares of common stock, at an exercise price of $3.87 per share, with an exercise term of two years from issuance. The exercise price of the warrants are subject to standard adjustments but do not contain any anti-dilution protection, and the

warrants only permit "cashless" or "net" exercise after the six-month anniversary of issuance, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the warrants. In addition, Foris may not exercise the warrants to the extent that, after giving effect to such exercise, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding after giving effect to such exercise, unless the Company has obtained stockholder approval to exceed such limit in accordance with Nasdaq rules and regulations, which the Company obtained at its 2019 annual meeting of stockholders on November 19, 2019.

The Company concluded the warrants are freestanding instruments that are legally detachable and separately exercisable from the October 2019 LSA Amendment and A&R LSA and will be classified in equity as the warrants are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrants within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrants were measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.65 and $4.00, strike price $2.87 and $3.87, volatility 94%, risk-free interest rate 1.63% and expected dividend yield 0%. The October 2019 Foris LSA Warrant had a fair value of $4.1 million and was recorded as an increase to additional paid in capital and as a loss on debt extinguishment as a non-cash fee paid to the lender. The November 2019 Foris Warrant had a fair value of $2.1 million and was recorded as an increase to additional paid in capital and additional debt discount to be amortized over the remaining term of the A&R LSA. See Note 4, "Debt" for further information regarding the accounting treatment for the fair value of each warrant. See Note 15, "Subsequent Events" for information regarding the amendment and exercise of the October 2019 Foris LSA Warrant on January 31, 2020.

*Naxyris LSA Warrant Issuances*

In connection with the entry into the Naxyris Loan Agreement (see Note 4, "Debt"), on August 14, 2019 the Company issued to Naxyris a warrant (the Naxyris LSA Warrant) to purchase up to 2.0 million shares of the Company's common stock at an exercise price of $2.87 per share, with an exercise term of two years from issuance. The exercise price of the warrant is subject to standard adjustments and permits "cashless" or "net" exercise any time after issuance.

The Company concluded the warrant is a freestanding instrument that is legally detachable and separately exercisable from the Naxyris Loan Facility and will be classified in equity as the warrant is both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrant within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrant was measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.59, strike price $2.87, volatility 94%, risk-free interest rate 1.58%, term 2.0 years, and expected dividend yield 0%. The warrant had a $4.0 million fair value and a $3.0 million relative fair value after allocating the Naxyris Loan Facility proceeds to the fair value of an embedded mandatory redemption feature contained in the Naxyris Loan Facility. The $3.0 million relative fair value of the Naxyris LSA Warrant was recorded as an increase to additional paid in capital and a debt discount to be amortized to interest expense under the effective interest method over the remaining term of the LSA. See Note 4, "Debt" for further information regarding the accounting treatment for the relative fair value of this warrant.

Also, in connection with the entry into the A&R Naxyris LSA, on October 28, 2019 the Company issued to Naxyris a warrant (the October 2019 Naxyris Warrant) to purchase up to 2.0 million shares of common stock, at an exercise price of $3.87 per share, with an exercise term of two years from issuance. The exercise price of the warrant is subject to standard adjustments and permits "cashless" or "net" exercise any time after issuance.

The Company concluded the warrant is a freestanding instrument that is legally detachable and separately exercisable from the Naxyris Loan Facility and will be classified in equity as the warrant is both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrant within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrant was measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.69, strike price $3.87, volatility 94%, risk-free interest rate 1.64%, term 2.0 years, and expected dividend yield 0%. The warrant had a $3.6 million fair value and a $2.8 million relative fair value after allocating the October 2019 Naxyris Loan proceeds to the fair value of the embedded mandatory redemption feature contained in the October 2019 Naxyris Loan. The $2.8 million relative fair value of the October 2019 Naxyris Warrant was recorded as an increase to additional paid in capital and as a loss on debt extinguishment as a non-cash fee paid to the lender. See Note 4, "Debt" for further information regarding the accounting treatment for the relative fair value of this warrant.

*August 2019 Foris Warrant Issuance*

In connection with the entry into the August 2019 Foris Credit Agreement (see Note 4, "Debt"), on August 28, 2019 the Company issued to Foris a warrant (the August 2019 Foris Warrant) to purchase up to 4.9 million shares of Common Stock at an exercise price of $3.90 per share, with an exercise term of two years from issuance. The exercise price of the warrant is subject to standard adjustments but does not contain any anti-dilution protection, and the warrant only permits "cashless" or "net" exercise after the six-month anniversary of issuance, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the warrant. In addition, Foris may not exercise the warrant to the extent that, after giving effect to such exercise, Foris, together with its affiliates, would beneficially own in excess of 19.99% of the number of shares of common stock outstanding after giving effect to such exercise, unless the Company has obtained stockholder approval to exceed such limit in accordance with Nasdaq rules and regulations, which the Company obtained at its 2019 annual meeting of stockholders on November 19, 2019.

The Company concluded the warrant is a freestanding instrument that is legally detachable and separately exercisable from the Foris $19 Million Note and will be classified in equity as the warrant is both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company will account for the fair value of the warrant within equity and will not subsequently remeasure to fair value at each reporting period, unless new events trigger a requirement for the warrants to be reclassified to an asset or liability. The warrant was measured using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.67, strike price $3.90, volatility 94%, risk-free interest rate 1.50%, term 2.0 years, and expected dividend yield 0%. The warrant had a $8.7 million fair value and a $5.2 million relative fair value after allocating the Foris $19 Million Note proceeds to the fair value of an embedded mandatory redemption feature contained in the Foris $19 Million Note. See Note 4, "Debt" for further information regarding the accounting treatment for the relative fair value of this warrant.

Also, on August 28, 2019 in connection with the entry into the August 2019 Foris Credit Agreement, the Company and Foris amended the warrant to purchase up to 3.9 million shares of common stock issued to Foris on April 26, 2019 to reduce the exercise price of such warrant from $5.12 per share to $3.90 per share, and amended the warrant to purchase up to 0.4 million shares of common stock issued to Foris on May 14, 2019 to reduce the exercise price of such warrant from $4.56 per share to $3.90 per share (see above under "*Private Placements*" for more information regarding these warrants). The warrant modifications were measured on a before and after modification basis using the Black-Scholes-Merton option pricing model with the following parameters: stock price $3.67, strike price $3.90, volatility 98% - 100%, risk-free interest rate 1.50%, term 1.7 years, and expected dividend yield 0%, resulting in $1.1 million of incremental fair value, which was accounted for as an increase to additional paid in capital and a debt discount to the Foris $19 Million Note. See Note 4, "Debt" for additional information regarding the debt discount recorded in connection with the modification of these warrants. See Note 15, "Subsequent Events" for information regarding the amendment and exercise of the August 2019 Foris Warrant on January 31, 2020.

*September and November 2019 Investor Credit Agreements Warrants Issuances*

In connection with the entry into the Investor Credit Agreements (see Note 4, "Debt"), on September 10, 2019, the Company issued to the Investors warrants (the Investor Warrants) to purchase up to an aggregate of 3.2 million shares of common stock at an exercise price of $3.90 per share, with an exercise term of two years from issuance. The exercise price of the warrants is subject to standard adjustments but does not contain any anti-dilution protection, and the warrants only permit "cashless" or "net" exercise after the six-month anniversary of issuance of the applicable warrant, and only to the extent that there is not an effective registration statement covering the resale of the shares of common stock underlying the applicable warrant. In addition, no Investor may exercise its warrant to the extent that, after giving effect to such exercise, such Investor, together with its affiliates, would beneficially own in excess of 9.99% of the number of shares of common stock outstanding after giving effect to such exercise. In addition, the Company agreed to file a registration statement providing for the resale by the Investors of the shares of common stock underlying the warrants with the SEC within 60 days following the date of the issuance of the warrants and to use commercially reasonable efforts to (i) cause such registration statement to become effective within 120 days following the date of the issuance of the warrants and (ii) keep such registration statement effective until the Investors no longer beneficially own any such shares of common stock or such shares of common stock are eligible for resale under Rule 144 under the Securities Act without regard to volume limitations. If the Company fails to file the registration statement by the filing deadline or the registration statement is not declared effective by the effectiveness deadline, or the Company fails to maintain the effectiveness of the registration statement as required by the warrants, then the exercise price of the warrants will be reduced by 10%, and by an additional 5% if such failure continues for longer than 90 days, subject to an exercise price floor of $3.31 per share, provided that upon the cure by the Company of such failure, the exercise price of the warrants will revert to $3.90 per share.

In connection with the November 2019 Schottenfeld CSA, on November 14, 2019, the Company warrants (the November 2019 Schottenfeld CSA Warrants) to purchase an aggregate of 2.0 million shares of common stock at an exercise price of $3.87 per share, with an exercise term of 2 years from issuance. In connection with the warrant issuance, the Company will be

required to pay the November 2019 Schottenfeld CSA Warrants holders and the Investor Warrants holders a fee if the Company issues equity securities in connection with the $50 million or greater financing provision that have an issue, conversion or exercise price of less than $3.90 or $3.87 per share, respectively. In such case, the fee will be the difference between the exercise price of such warrants (i.e., $3.90 or $3.87) and the issue, conversion or exercise price of the equity securities issued in the $50 million or greater financing, times the total number of warrants issued to such investors in November 2019 and September 2019. See Note 15, "Subsequent Events" for information regarding the amendment of the Investor Warrants and the November 2019 Schottenfeld CSA Warrants on February 28, 2020.

The Company concluded the Investor Warrants and the November 2019 Schottenfeld CSA Warrants are freestanding instruments that are legally detachable and separately exercisable from the underlying debt host instruments and should be classified and accounted for as a liability as the warrants contain certain price and share count adjustment protection, and other modification protection provisions that cause the warrants to fail the fixed-for-fixed criterion, and thus, are not considered indexed to the Company's stock. Accordingly, the Company has accounted for the Investor Warrants and November 2019 Schottenfeld CSA Warrants as a liability and will subsequently remeasure to fair value at each reporting period with changes in fair value recorded in the statement of operations. The warrants were measured using the Black-Scholes-Merton option pricing model with the following parameters as of the September 10, 2019 and November 14, 2019 issuance dates: stock price $4.56 and $3.89, strike price $3.90 and $3.87, volatility 94% and 95%, risk-free interest rate 1.67% and 1.58%, term 2 years, and expected dividend yield 0%. The warrants had an initial fair value of $7.9 million and $4.0 million, respectively and were recorded as derivative liabilities with an offset to either debt discount or loss on debt extinguishment (as a non-cash fee paid to the lender). See Note 3, "Fair Value Measurements" for information regarding the subsequent fair value measurement for this liability classified warrant and see Note 4, "Debt" for further information regarding the initial accounting treatment of the offsetting debt discount or loss on debt extinguishment.

*Standstill Agreement*

In connection with the September 10, 2019 entry into the Investor Credit Agreements discussed in Note 4, "Debt" and the issuance of the Investor Warrants discussed in the "September and November 2019 Investor Credit Agreements Warrants Issuances " section above, the Company and the Investors entered into a Standstill Agreement (the Investor Standstill Agreement), pursuant to which the Investors agreed that, until the earliest to occur of (i) the Investors no longer beneficially owning any shares underlying the warrants, (ii) the Company entering into a definitive agreement involving the direct or indirect acquisition of all or a majority of the Company's equity securities or all or substantially all of the Company's assets or (iii) a person or group, with the prior approval of the Company's Board of Directors (the Board), commencing a tender offer for all or a majority of the Company's equity securities, neither the Investors nor any of their respective affiliates (together, the Investor Group) will (without the prior written consent of the Board), among other things, (a) acquire any loans, debt securities, equity securities, or assets of the Company or any of its subsidiaries, or rights or options with respect thereto, except that the Investor Group shall be permitted to (y) purchase the shares underlying the warrants pursuant to the exercise of the warrants and (z) acquire beneficial ownership of up to 6.99% of the Company's common stock, or (b) make any proposal, public announcement, solicitation or offer with respect to, or otherwise solicit, seek or offer to effect, or instigate, encourage, or assist any third party with respect to: (1) any business combination, merger, tender offer, exchange offer, or similar transaction involving the Company or any of its subsidiaries; (2) any restructuring, recapitalization, liquidation, or similar transaction involving the Company or any of its subsidiaries; (3) any acquisition of any of the Company's loans, debt securities, equity securities or assets, or rights or options with respect thereto; or (4) any proposal to seek representation on the Board or otherwise seek to control or influence the management, Board, or policies of the Company, in each case subject to certain exceptions.

*May 2017 Warrants*

In May 2017, the Company issued 14,768,380 shares of common stock in the aggregate to certain investors (collectively, the May 2017 Cash Warrants). The exercise price of the May 2017 Cash Warrants is subject to standard adjustments as well as full-ratchet anti-dilution protection for any issuance by the Company of equity or equity-linked securities during the three-year period following the issuance of such warrants at a per share price less than the then-current exercise price of the May 2017 Cash Warrants, subject to certain exceptions. As of December 31, 2019, the exercise prices of the May 2017 Cash Warrants were $2.87 per share, and 6,078,156 of May 2017 Cash Warrants were unexercised.

In addition to the May 2017 Cash Warrants, the Company issued to each investor a warrant, with an exercise price of $0.0015 per share (collectively, the May 2017 Dilution Warrants), to purchase a number of shares of common stock sufficient to provide the investor with full-ratchet anti-dilution protection for any issuance by the Company of equity or equity-linked securities during the May 2017 Dilution Period at a per share price less than $2.87. As of December 31, 2019, the May 2017 Dilution Warrants were exercisable for an aggregate of 3,085,893 shares.

The May 2017 Warrants each have a term of five years from the date such warrants initially became exercisable on July 10, 2017. The May 2017 Cash Warrants are freestanding financial instruments and upon adoption of ASU 2017-11 on January 1, 2019 are no longer accounted for as derivative liabilities, but are classified in equity as the warrants are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company reclassified the derivative balance at December 31, 2018 to equity at the January 1, 2019 adoption date.

***August 2017 DSM Offering – Related Party***

On August 7, 2017, the Company issued and sold the following securities to DSM in a private placement (August 2017 DSM Offering):

- 25,000 shares of Series B Preferred Stock (August 2017 DSM Series B Preferred Stock) at a price of $1,000 per share;
- a warrant to purchase 3,968,116 shares of common stock at an initial exercise price of $6.30 per share expiring in five years (August 2017 DSM Cash Warrant); and
- the August 2017 DSM Dilution Warrant (as described below).

Net proceeds to the Company were $25.9 million after payment of offering expenses and the allocation of total fair value received to the elements in the arrangement.

The exercise price of the August 2017 DSM Cash Warrant is subject to standard adjustments as well as full-ratchet anti-dilution protection for any issuance by the Company of equity or equity-linked securities during the three-year period following August 7, 2017 (DSM Dilution Period) at a per share price less than the then-current exercise price of the August 2017 DSM Cash Warrant, subject to certain exceptions. As of December 31, 2019, the exercise price of the August 2017 DSM Cash Warrant was $2.87 per share, and 3,968,116 of May 2017 Cash Warrants were unexercised. The August 2017 DSM Dilution Warrants are freestanding financial instruments and upon adoption of ASU 2017-11 on January 1, 2019 are no longer accounted for as derivative liabilities, but are classified in equity as the warrants are both indexed to the Company's own stock and meet the equity classification criteria. As such, the Company reclassified the derivative balance at December 31, 2018 to equity at the January 1, 2019 adoption date.

The August 2017 DSM Dilution Warrant allows DSM to purchase a number of shares of common stock sufficient to provide DSM with full-ratchet anti-dilution protection for any issuance by the Company of equity or equity-linked securities during the DSM Dilution Period at a per share price less than $2.87. The August 2017 DSM Dilution Warrant expires five years from the date it is initially exercisable.

In connection with the August 2017 DSM Offering, the Company and DSM also entered into an amendment to the stockholder agreement dated May 11, 2017 (DSM Stockholder Agreement) between the Company and DSM (Amended and Restated DSM Stockholder Agreement). Under the DSM Stockholder Agreement, DSM was granted the right to designate one director selected by DSM, subject to certain restrictions and a minimum beneficial ownership level of 4.5%, to the Board. Furthermore, DSM has the right to purchase additional shares of capital stock of the Company in connection with a sale of equity or equity-linked securities by the Company in a capital raising transaction for cash, subject to certain exceptions, to maintain its proportionate ownership percentage in the Company. Pursuant to the DSM Stockholder Agreement, DSM agreed not to sell or transfer any of the Series B Preferred Stock or warrants purchased by DSM, or any shares of common stock issuable upon conversion or exercise thereof, other than to its affiliates, without the consent of the Company through May 2018 and to any competitor of the Company thereafter. DSM also agreed that, subject to certain exceptions, until three months after there is no DSM director on the Board, DSM will not, without the prior consent of the Board, acquire common stock or rights to acquire common stock that would result in DSM beneficially owning more than 33% of the Company's outstanding voting securities at the time of acquisition. The Amended and Restated DSM Stockholder Agreement provides that (i) DSM has the right to designate a second director to the Board, subject to certain restrictions and a minimum beneficial ownership level of 10%, and (ii) the shares of common stock issuable upon conversion or exercise of the securities purchased by DSM in the August 2017 DSM Offering are (a) entitled to the registration rights provided for in the DSM Stockholder Agreement and (b) subject to the transfer restrictions set forth in the DSM Stockholder Agreement.

***August 2017 Vivo Offering – Related Party***

On August 3, 2017, the Company issued and sold 12,958 shares of Series D Preferred Stock at a price of $1,000 per share along with other securities to Vivo in a private placement (August 2017 Vivo Offering), resulting in net proceeds to the Company of $24.8 million after payment of offering expenses. In the third quarter of 2018 Vivo converted 4,678 shares of August 2017 Offerings Series D Preferred Stock and the Company recognized a $6.8 million deemed dividend for the

unamortized discounts created from the allocation of proceeds, as a reduction to Additional Paid in Capital and increasing net loss attributable to Amyris, Inc. common stockholders. At December 31, 2019 and 2018, 8,280 shares of Series D Preferred Stock were outstanding. The conversion of the Series D Preferred Stock is subject to a beneficial ownership limitation of 9.99% (August 2017 Vivo Offering Beneficial Ownership Limitation), which limitation may be waived by the holders on 61 days' prior notice.

Each share of Series D Preferred Stock has a stated value of $1,000 and, subject to the August 2017 Vivo Offering Beneficial Ownership Limitation, is convertible at any time, at the option of the holders, into common stock at a conversion price of $4.26 per share. The Series D Conversion Rate is subject to adjustment in the event of any dividends or distributions of the common stock, or any stock split, reverse stock split, recapitalization, reorganization or similar transaction.

Prior to declaring any dividend or other distribution of its assets to holders of common stock, the Company shall first declare a dividend per share on the Series D Preferred Stock equal to $0.0001 per share. In addition, the Series D Preferred Stock will be entitled to participate with the common stock on an as-converted basis with respect to any dividends or other distributions to holders of common stock. There were no dividends declared as of December 31, 2019 or 2018.

Unless and until converted into common stock in accordance with its terms, the Series D Preferred Stock has no voting rights, other than as required by law or with respect to matters specifically affecting the Series D Preferred Stock. The Series D Preferred Stock is classified as permanent equity, as the Company controls all actions or events required to settle the optional conversion feature in shares.

In the event of a Fundamental Transaction, the holders of the Series D Preferred Stock will have the right to receive the consideration receivable as a result of such Fundamental Transaction by a holder of the number of shares of common stock for which the Series D Preferred Stock is convertible immediately prior to such Fundamental Transaction (without regard to whether such Series D Preferred Stock is convertible at such time), which amount shall be paid pari passu with all holders of common stock. A Fundamental Transaction is defined in the Certificate of Designation of Preferences, Rights and Limitations relating to the Series D Preferred Stock as any of the following: (i) merger with or consolidation into another legal entity; (ii) sale, lease, license, assignment, transfer or other disposition of all or substantially all of the Company's assets in one or a series of related transactions; (iii) purchase offer, tender offer or exchange offer of the Company's common stock pursuant to which holders of the Company's common stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding common stock; (iv) reclassification, reorganization or recapitalization of the Company's stock; or (v) stock or share purchase agreement that results in another party acquiring more than 50% of the Company's outstanding shares of common stock.

Upon any liquidation, dissolution or winding-up of the Company, the holders of the Series D Preferred Stock shall be entitled to receive out of the assets of the Company the same amount that a holder of common stock would receive if the Series D Preferred Stock were fully converted to common stock immediately prior to such liquidation, dissolution or winding-up (without regard to whether such Series D Preferred Stock is convertible at such time), which amount shall be paid pari passu with all holders of common stock.

In connection with the August 2017 Vivo Offering, the Company and Vivo also entered into a Stockholder Agreement (Vivo Stockholder Agreement) setting forth certain rights and obligations of Vivo and the Company. Pursuant to the Vivo Stockholder Agreement, Vivo will have the right, subject to certain restrictions and a minimum beneficial ownership level of 4.5%, to (i) designate one director selected by Vivo to the Board and (ii) appoint a representative to attend all Board meetings in a nonvoting observer capacity and to receive copies of all materials provided to directors, subject to certain exceptions. Furthermore, Vivo will have the right to purchase additional shares of capital stock of the Company in connection with a sale of equity or equity-linked securities by the Company in a capital raising transaction for cash, subject to certain exceptions, to maintain its proportionate ownership percentage in the Company. Vivo agreed not to sell or transfer any of the shares of common stock, Series D Preferred Stock or warrants purchased by Vivo in the August 2017 Vivo Offering, or any shares of common stock issuable upon conversion or exercise thereof, other than to its affiliates, without the consent of the Company through August 2018 and to any competitor of the Company thereafter. Vivo also agreed that, subject to certain exceptions, until the later of (i) three years from the closing of the August 2017 Vivo Offering and (ii) three months after there is no Vivo director on the Board, Vivo will not, without the prior consent of the Board, acquire common stock or rights to acquire common stock that would result in Vivo beneficially owning more than 33% of the Company's outstanding voting securities at the time of acquisition. Under the Vivo Stockholder Agreement, the Company agreed to use its commercially reasonable efforts to register, via one or more registration statements filed with the SEC under the Securities Act, the shares of common stock purchased in the August 2017 Vivo Offering as well as the shares of common stock issuable upon conversion or exercise of the Series D Preferred Stock and warrants purchased by Vivo in the August 2017 Vivo Offering.

For information regarding issuances of equity securities subsequent to December 31, 2019, see Note 15, "Subsequent Events".

***Right of First Investment to Certain Investors***

In connection with investments in the Company has granted certain investors, including Vivo and DSM, a right of first investment if the Company proposes to sell securities in certain financing transactions. With these rights, such investors may subscribe for a portion of any such new financing and require the Company to comply with certain notice periods, which could discourage other investors from participating in, or cause delays in its ability to close, such a financing.

## 7. Net Loss per Share Attributable to Common Stockholders

The Company computes net loss per share in accordance with ASC 260, "Earnings per Share." Basic net loss per share of common stock is computed by dividing the Company's net loss attributable to Amyris, Inc. common stockholders by the weighted-average number of shares of common stock outstanding during the period. Diluted net loss per share of common stock is computed by giving effect to all potentially dilutive securities, including stock options, restricted stock units, convertible preferred stock, convertible promissory notes and common stock warrants, using the treasury stock method or the as converted method, as applicable. For the year ended December 31, 2018, basic net loss per share was the same as diluted net loss per share because the inclusion of all potentially dilutive securities outstanding was anti-dilutive. As such, the numerator and the denominator used in computing both basic and diluted net loss were the same for those years.

The Company follows the two-class method when computing net loss per common share when shares are issued that meet the definition of participating securities. The two-class method requires income available to common stockholders for the period to be allocated between common stock and participating securities based upon their respective rights to receive dividends as if all income for the period had been distributed. The two-class method also requires losses for the period to be allocated between common stock and participating securities based on their respective rights if the participating security contractually participates in losses. The Company's convertible preferred stock are participating securities as they contractually entitle the holders of such shares to participate in dividends and contractually require the holders of such shares to participate in the Company's losses.

The following table presents the calculation of basic and diluted net loss per share of common stock attributable to Amyris, Inc. common stockholders:

| **Years Ended December 31,<br>(In thousands, except shares and per share amounts)** | **2019** | **2018** |
|---|---|---|
| *Numerator:* | | |
| Net loss attributable to Amyris, Inc. | $ (242,767) | $ (230,235) |
| Less deemed dividend to preferred shareholder on issuance and modification of common stock warrants | (34,964) | — |
| Less deemed dividend related to proceeds discount upon conversion of Series D preferred stock | — | (6,852) |
| Add: losses allocated to participating securities | 7,380 | 13,991 |
| Net loss attributable to Amyris, Inc. common stockholders, basic | (270,351) | (223,096) |
| Adjustment to losses allocated to participating securities | 137 | — |
| Gain from change in fair value of derivative instruments | (4,963) | — |
| Net loss attributable to Amyris, Inc. common stockholders, diluted | $ (275,177) | $ (223,096) |
| | | |
| *Denominator:* | | |
| Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, basic | 101,370,632 | 60,405,910 |
| Basic loss per share | $ (2.67) | $ (3.69) |
| | | |
| Weighted-average shares of common stock outstanding | 101,370,632 | 60,405,910 |
| Effect of dilutive common stock warrants | (74,057) | — |
| Weighted-average common stock equivalents used in computing net income (loss) per share of common stock, diluted | 101,296,575 | 60,405,910 |
| Diluted loss per share | $ (2.72) | $ (3.69) |

The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net loss per share of common stock for the periods presented because including them would have been anti-dilutive:

| Years Ended December 31, | 2019 | 2018 |
|---|---|---|
| Period-end common stock warrants | 59,204,650 | 25,986,370 |
| Convertible promissory notes[(1)] | 13,381,238 | 13,703,162 |
| Period-end stock options to purchase common stock | 5,620,419 | 5,392,269 |
| Period-end restricted stock units | 5,782,651 | 5,294,848 |
| Period-end preferred shares on an as-converted basis | 1,943,661 | 2,955,732 |
| Total potentially dilutive securities excluded from computation of diluted net loss per share | 85,932,619 | 53,332,381 |

(1) The potentially dilutive effect of convertible promissory notes was computed based on conversion ratios in effect at the respective year-end. A portion of the convertible promissory notes issued carries a provision for a reduction in conversion price under certain circumstances, which could potentially increase the dilutive shares outstanding. Another portion of the convertible promissory notes issued carries a provision for an increase in the conversion rate under certain circumstances, which could also potentially increase the dilutive shares outstanding.

## 8. Commitments and Contingencies

***Guarantor Arrangements***

The Company has agreements whereby it indemnifies its executive officers and directors for certain events or occurrences while the executive officer or director is serving in his or her official capacity. The indemnification period remains enforceable for the executive officer's or director's lifetime. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited; however, the Company has a director and officer insurance policy that limits its exposure and enables the Company to recover a portion of any future payments. As a result of its insurance policy coverage, the Company believes the estimated fair value of these indemnification agreements is minimal. Accordingly, the Company had no liabilities recorded for these agreements as of December 31, 2019 and 2018.

The Foris LSA debt facility (see Note 4, "Debt") is collateralized by first-priority liens on substantially all of the Company's assets, including Company intellectual property, other than certain Company intellectual property licensed to DSM and the Company's shares of Aprinnova. Certain of the Company's subsidiaries have guaranteed the Company's obligations under the Foris LSA.

The obligations of the Company under the Naxyris note (see Note 4, "Debt") are (i) guaranteed by the Subsidiary Guarantors and (ii) secured by a perfected security interest in substantially all of the assets of the Company and the Subsidiary Guarantors (the Collateral), junior in payment priority to Foris subject to certain limitations and exceptions, as well as the terms of the Intercreditor Agreement.

The Nikko debt instruments are collateralized as follows:

- Nikko $3.9 million note: first-priority lien on 10.0% of the Aprinnova JV interests owned by the Company
- Nikko $5.0 million note: first-priority lien on 12.8% of shares of Aprinnova
- Nikko $4.5 million note: first-priority lien on 27.2% of shares of Aprinnova

The promissory notes issued under the 2019 DSM Credit Agreement (see Note 4, "Debt") are secured by a first-priority lien on certain Company intellectual property licensed to DSM.

The obligations of the Company under the Investor Notes and the Schottenfeld CSA (see Note 4, "Debt" and Note 15, "Subsequent Events") are secured by a perfected security interest in substantially all of the assets of the Company and the Subsidiary Guarantors, junior in payment priority to Foris and Naxyris subject to the Subordination Agreement among Foris, Naxyris and the Investors.

***Other Matters***

Certain conditions may exist as of the date the financial statements are issued, which may result in a loss to the Company but will only be recorded when one or more future events occur or fail to occur. The Company's management assesses such contingent liabilities, and such assessment inherently involves an exercise of judgement. In assessing loss contingencies related to legal proceedings that are pending against and by the Company or unasserted claims that may result in such proceedings, the Company's management evaluates the perceived merits of any legal proceedings or unasserted claims as well as the perceived merits of the amount of relief sought or expected to be sought.

If the assessment of a contingency indicates that it is probable that a material loss has been incurred and the amount of the liability can be estimated, then the estimated liability would be accrued in the Company's financial statements. If the assessment indicates that a potential material loss contingency is not probable but is reasonably possible, or is probable but cannot be reasonably estimated, then the nature of the contingent liability, together with an estimate of the range of possible loss if determinable and material would be disclosed. Loss contingencies considered to be remote by management are generally not disclosed unless they involve guarantees, in which case the guarantee would be disclosed.

On April 3, 2019, a securities class action complaint was filed against Amyris and our CEO, John G. Melo, and former CFO (and current Chief Business Officer), Kathleen Valiasek, in the U.S. District Court for the Northern District of California. The complaint seeks unspecified damages on behalf of a purported class that would comprise all persons and entities that purchased or otherwise acquired our securities between March 15, 2018 and March 19, 2019. The complaint, which was amended by the lead plaintiff on September 13, 2019, alleges securities law violations based on statements and omissions made by the Company during such period. On October 25, 2019, the defendants filed a motion to dismiss the securities class action

complaint. The hearing on such motion to dismiss was held on February 18, 2020 and we are awaiting a ruling from the Court. Subsequent to the filing of the securities class action complaint described above, on June 21, 2019 and October 1, 2019, respectively, two separate purported shareholder derivative complaints were filed in the U.S. District Court for the Northern District of California (Bonner v. Doerr, et al., and Carlson v. Doerr, et al.) based on similar allegations to those made in the securities class action complaint described above and named the Company and certain of the Company's current and former officers and directors as defendants. The derivative lawsuits sought to recover, on the Company's behalf, unspecified damages purportedly sustained by the Company in connection with allegedly misleading statements and omissions made in connection with the Company's securities filings. The derivative lawsuits were dismissed on October 18, 2019 (Bonner) and December 10, 2019 (Carlson), without prejudice. We believe the securities class action complaint lacks merit, and intend to continue to defend ourselves vigorously. Given the early stage of these proceedings, it is not yet possible to reliably determine any potential liability that could result from these matters.

The Company is subject to disputes and claims that arise or have arisen in the ordinary course of business and that have not resulted in legal proceedings or have not been fully adjudicated. Such matters that may arise in the ordinary course of business are subject to many uncertainties and outcomes are not predictable with reasonable assurance and therefore an estimate of all the reasonably possible losses cannot be determined at this time. Therefore, if one or more of these legal disputes or claims resulted in settlements or legal proceedings that were resolved against the Company for amounts in excess of management's expectations, the Company's consolidated financial statements for the relevant reporting period could be materially adversely affected.

## 9. Revenue Recognition

### *Disaggregation of Revenue*

The following tables present revenue by primary geographical market, based on the location of the customer, as well as by major product and service:

| Years Ended December 31, (In thousands) | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|
| | Renewable Products | Licenses and Royalties | Grants and Collaborations | TOTAL | Renewable Products | Licenses and Royalties | Grants and Collaborations | TOTAL |
| Europe | $ 10,092 | $ 54,043 | $ 6,674 | $ 70,809 | $ 7,576 | $ 7,658 | $ 14,172 | $ 29,406 |
| United States | 34,295 | — | 24,376 | 58,671 | 16,292 | — | 9,948 | 26,240 |
| Asia | 11,503 | — | 7,477 | 18,980 | 8,664 | — | (2,333) | 6,331 |
| Brazil | 3,612 | — | 115 | 3,727 | 381 | — | 561 | 942 |
| Other | 370 | — | — | 370 | 685 | — | — | 685 |
| | $ 59,872 | $ 54,043 | $ 38,642 | $ 152,557 | $ 33,598 | $ 7,658 | $ 22,348 | $ 63,604 |

### *Significant Revenue Agreements*

For the years ended December 31, 2019 and 2018, the Company recognized revenue in connection with significant revenue agreements and from all other customers as follows:

| Years Ended December 31, (In thousands) | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|
| | Renewable Products | Licenses and Royalties | Grants and Collaborations | TOTAL | Renewable Products | Licenses and Royalties | Grants and Collaborations | TOTAL |
| Revenue from significant revenue agreements with: | | | | | | | | |
| DSM (related party) | $ 10 | $ 49,051 | $ 4,120 | $ 53,181 | $ 18 | $ 5,958 | $ 4,735 | $ 10,711 |
| Firmenich | 8,591 | 4,992 | 1,413 | 14,996 | 3,727 | 1,700 | 5,717 | 11,144 |
| Lavvan | — | — | 18,342 | 18,342 | — | — | — | — |
| Givaudan | 7,477 | — | 1,500 | 8,977 | 4,078 | — | 4,358 | 8,436 |
| DARPA | — | — | 5,504 | 5,504 | — | — | 8,436 | 8,436 |
| Subtotal revenue from significant revenue agreements | 16,078 | 54,043 | 30,879 | 101,000 | 7,823 | 7,658 | 23,246 | 38,727 |
| Revenue from all other customers | 43,794 | — | 7,763 | 51,557 | 25,775 | — | (898) | 24,877 |
| Total revenue from all customers | $ 59,872 | $ 54,043 | $ 38,642 | $ 152,557 | $ 33,598 | $ 7,658 | $ 22,348 | $ 63,604 |

*Cannabinoid Agreement*

On May 2, 2019, the Company consummated a research, collaboration and license agreement (the Cannabinoid Agreement) with LAVVAN, Inc., a newly formed investment-backed company (Lavvan), for up to $300 million to develop, manufacture and commercialize cannabinoids, subject to certain closing conditions. Under the agreement, the Company would perform research and development activities and Lavvan would be responsible for the manufacturing and commercialization of the cannabinoids developed under the agreement. The Cannabinoid Agreement is being principally funded on a milestone basis, with the Company also entitled to receive certain supplementary research and development funding from Lavvan. The Company could receive aggregate funding of up to $300 million over the term of the Cannabinoid Agreement if all of the milestones are achieved. Additionally, the Cannabinoid Agreement provides for profit share to the Company on Lavvan's gross profit margin once products are commercialized; these payments will be due for the next 20 years. On May 2, 2019, the parties consummated the transactions contemplated by the Cannabinoid Agreement, including the formation of a special purpose entity to hold certain intellectual property created during the collaboration (the Cannabinoid Collaboration IP), the licensing of certain Company intellectual property to Lavvan, the licensing of the Cannabinoid Collaboration IP to the Company and Lavvan, and the granting by the Company to Lavvan of a lien on the Company background intellectual property being licensed to Lavvan under the Cannabinoid Agreement, which lien would be subordinated to the lien on such intellectual property under the Foris LSA (see Note 4, “Debt”).

The Cannabinoid Agreement is accounted for as a revenue contract under ASC 606, with the total transaction price estimated and updated on a quarterly basis, subject to the variable consideration constraint guidance in ASC 606 using the most likely outcome method to estimate the variable consideration associated with the identified performance obligations. The Company concluded the agreement contained a single performance obligation of research and development services provided

continuously over time. The Company estimated the total unconstrained transaction price to be $145 million, based on a high probability of achieving certain underlying milestones. As of December 31, 2019, the Company has constrained $181.0 million of variable consideration related to milestones that have not met the criteria under ASC 606 necessary to be included in the transaction price. The Company concluded that the performance obligation is delivered over time and that revenue recognition is based on an input measure of progress of hours incurred compared to total estimated hours to be incurred (i.e., proportional performance). Estimates of variable consideration are updated quarterly, with cumulative adjustments to revenue recorded as necessary. The Company recognized $18.3 million of collaboration revenue under the Cannabinoid Agreement for the year ended December 31, 2019 based on proportional performance delivered to date. At December 31, 2019, $8.3 million of the collaboration revenues recognized in the year ended December 31, 2019 were recorded as a contract asset. See the "Contract Assets and Liabilities" section below for further information regarding this contract asset.

*Firmenich Agreements*

In July 2017, the Company and Firmenich entered into the Firmenich Collaboration Agreement Agreement (for the development and commercialization of multiple renewable flavors and fragrances molecules), pursuant to which the parties agreed to exclude certain molecules from the scope of the agreement and to amend certain terms connected with the supply and use of such molecules when commercially produced. In addition, the parties agreed to (i) fix at a 70/30 basis (70% for Firmenich) the ratio at which the parties will share profit margins from sales of two molecules; (ii) set at a 70/30 basis (70% for Firmenich) the ratio at which the parties will share profit margins from sales of a distinct form of compound until Firmenich receives $15.0 million more than the Company in the aggregate from such sales, after which time the parties will share the profit margins 50/50 and (iii) a maximum Company cost of a compound where a specified purchase volume is satisfied, and alternative production and margin share arrangements in the event such Company cost cap is not achieved.

In August 2018, the Company and Firmenich entered into the Firmenich Amended and Restated Supply Agreement, which incorporates all previous amendments and new changes and supersedes the September 2014 supply agreement. With this Amended and Restated Supply Agreement, the parties agreed on the molecules to be supplied under the agreement and the commercial specifications of these products, and made some adjustments to the pricing of the molecules.

Pursuant to the Firmenich Collaboration Agreement, the Company agreed to pay a one-time success bonus to Firmenich of up to $2.5 million if certain commercialization targets are met. Such targets have not yet been met as of December 31, 2019. The one-time success bonus will expire upon termination of the Firmenich Collaboration Agreement, which has an initial term of 10 years and will automatically renew at the end of such term (and at the end of any extension) for an additional 3-year term unless otherwise terminated. At December 31, 2019, the Company had a $0.7 million liability associated with this one-time success bonus that has been recorded as a reduction to the associated collaboration revenue.

*Givaudan Agreements*

In September 2018, Amyris and Givaudan, entered into a Collaboration Agreement for the development and commercialization of molecules for use and sale in the cosmetics and flavors markets (collectively the “Collaboration Markets”). Under Collaboration Agreement, the parties will collaborate to develop, produce and commercialize. Under the agreement, the Company granted Givaudan exclusive access to specified intellectual property for the development and commercialization of such molecules in the Collaboration Markets in exchange for research and development funding. Funding, including payment terms, will be based on milestones and milestone-based payments, to be mutually agreed upon by the parties on a project by project basis. The Company is currently working on development and commercialization of two significant molecules. The Company also manufactures and supplies a certain compound that was developed by the Company under a prior (expired) collaboration agreement with Givaudan. The supply agreement was entered into in September 2018 and has a five-year term with successive one-year renewals until terminated by either party.

Following the research and development phase of a project, if Givaudan elects to proceed with commercialization, a supply agreement will be negotiated for each compound. The significant terms for each supply agreement are set forth in the Collaboration Agreement including the price at which the molecules are to be supplied. The price for each compound will be negotiated and agreed upon by both parties at a future time. Under the Collaboration Agreement, following commercial development of the agreed upon compound, the Company will manufacture the compound and Givaudan will perform any required downstream polishing, distribution, sales and marketing. The collaboration work and supply of the molecules is exclusively limited to the Cosmetics Actives Market and the Flavors Market.

*DSM July and September 2017 Collaboration and Licensing Agreements*

In July and September 2017, the Company entered into three separate collaboration agreements with DSM (DSM Collaboration Agreements) to jointly develop three new molecules in the Health & Wellness (DSM Ingredients) market using the Company's technology, which the Company would produce and DSM would commercialize. Pursuant to the DSM Collaboration Agreements, DSM will, subject to certain conditions, provide funding for the development of the DSM Ingredients and, upon commercialization, the parties would enter into supply agreements whereby DSM would purchase the applicable DSM Ingredients from the Company at prices agreed by the parties. The development services will be directed by a joint steering committee with equal representation by DSM and the Company. In addition, the parties will share profit margin from DSM's sales of products that incorporate the DSM Ingredients subject to the DSM Collaboration Agreements.

In connection with the entry into the DSM Collaboration Agreements, the Company and DSM also entered into certain license arrangements (DSM License Agreements) providing DSM with certain rights to use the technology underlying the development of the DSM Ingredients to produce and sell products incorporating the DSM Ingredients. Under the DSM License Agreements, DSM paid the Company $9.0 million for a worldwide, exclusive, perpetual, royalty-free license to produce and sell products incorporating one of the DSM Ingredients in the Health & Wellness field.

*December 2017 DSM Agreements*

In December 2017, the Company entered into a series of agreements with DSM (December 2017 DSM Agreements) which are described below. The December 2017 DSM Agreements were evaluated as a combined transaction for accounting purposes in conjunction with the sales of the Brotas 1 facility discussed more fully in Note 10, "Related Party Transactions" and Note 12, "Divestiture".

*DSM November 2017 Intellectual Property License Agreement*

In November 2017, in connection with the Company's divestiture of its Brotas, Brazil production facility (see Note 12, "Divestiture"), the Company and DSM entered into a license agreement covering certain intellectual property of the Company useful in the performance of certain commercial supply agreements assigned by the Company to DSM relating to products currently manufactured at the Brotas facility (DSM November 2017 Intellectual Property License Agreement). In December 2017, DSM paid the Company an upfront license fee of $27.5 million. In accounting for the Divestiture with DSM, a multiple-element arrangement, the license of intellectual property to DSM was identified as revenue deliverable with standalone value and qualified as a separate unit of accounting. The Company performed an analysis to determine the fair value for of the license, and allocated the non-contingent consideration based on the relative fair value. The Company determined that the license had been fully delivered, and, as such, license revenue of $54.6 million was recognized for the period ended December 31. 2017.

On November 19, 2018, the Company and DSM entered into a letter agreement (November 2018 DSM Letter Agreement), pursuant to which the Company agreed (i) to cause the removal of certain existing liens on intellectual property owned by the Company and licensed to DSM and (ii) if such liens were not removed prior to December 15, 2018, to issue to DSM shares of the Company's common stock with a value equal to $5.0 million. On December 14, 2018, the Company entered into an amendment to the GACP Term Loan Facility to remove such lien, and the November 2018 DSM Letter Agreement was thereby terminated.

*DSM Value Sharing Agreement*

In December 2017, in conjunction with the Company's divestiture of its Brotas, Brazil production facility (see Note 12, "Divestiture" and Note 10, "Related Party Transactions"), the Company and DSM entered into a value sharing agreement (Value Sharing Agreement), pursuant to which DSM agreed to make certain royalty payments to the Company representing a portion of the profit on the sale of products produced using farnesene purchased under the Nenter Supply Agreement realized by Nenter and paid to DSM in accordance with the Nenter Supply Agreement. In addition, pursuant to the Value Sharing Agreement, DSM agreed to guarantee certain minimum annual royalty payments totaling $33.1 million over the first three calendar years of the Value Sharing Agreement, subject to future offsets in the event that the royalty payments to which the Company would otherwise have been entitled under the Value Sharing Agreement for such years fall below certain milestones. The nonrefundable minimum annual royalty payments were determined to be fixed and determinable and were included as part of the total arrangement consideration subject to allocation in the December 2017 multiple-element divestiture transaction with DSM. At closing, DSM paid the Company a nonrefundable royalty payment of $15.0 million under the Value Sharing Agreement and paid two additional future nonrefundable minimum annual royalty payments totaling $18.1 million related to 2019 and 2020 royalties. In June 2018, the Company received the 2019 non-refundable minimum royalty payment of $9.3 million (net of a $0.7 million early payment discount) and in March 2019, the Company received the 2020 payment of

$7.4 million (net of a $0.7 million early payment discount). During 2018, the Company and DSM amended the Value Sharing Agreement to (i) provide for the use of estimates in calculating quarterly royalty payments (subject to true-up), (ii) modify how the guaranteed minimum annual royalty payment for 2018 will be offset against value payments accruing during 2018 and (iii) accelerate the minimum annual royalty payment for 2019 from December 31, 2018 to June 30, 2018 in exchange for a fee of $750,000. For the year ended December 31, 2018, the Company recognized $7.9 million of revenue in connection with the DSM Value Sharing Agreement.

In April 2019, the Company assigned to DSM, and DSM assumed, all of the Company’s rights and obligations under the December 2017 DSM Value Sharing Agreement, as amended, for aggregate consideration to the Company of $57.0 million, which included $7.4 million received on March 29, 2019 for the third and final annual royalty payment due under the original agreement. On April 16, 2019, the Company received net cash of $21.7 million, with the remaining $27.9 million used by the Company to offset past due trade payables (including interest) under the 2017 Supply Agreement (discussed below), the obligation under the November 2018 Securities Purchase Agreement, and manufacturing capacity fees under the provisions of Amendment No. 1 to the 2017 Supply Agreement (see Note 10, "Related Party Transactions" for a description of these agreements).

The original Value Sharing Agreement was accounted for as a single performance obligation in connection with a license with fixed and determinable consideration and variable consideration that was accounted for pursuant to the sales-based royalty scope exception. The April 16, 2019 assignment of the December 2017 DSM Value Sharing Agreement was accounted for as a contract modification under ASC 606, resulting in additional fixed and determinable consideration of $37.1 million and variable consideration of $12.5 million in the form of a stand-ready obligation to refund some or all of the $12.5 million consideration if certain criteria outlined in the assignment agreement are not met by December 2021. The Company periodically updates its estimate of amounts to be retained and reduces the refund liability and records additional license and royalty revenue as the criteria are met. The effect of the contract modification on the transaction price, and on the Company’s measure of progress toward complete satisfaction of the performance obligation was recognized as an adjustment to revenue at the date of the contract modification on a cumulative catch-up basis. As a result, the Company recognized $37.1 million of license and royalty in the second quarter of 2019, due to fully satisfying the performance obligation at the modification date.The Company also recognized an additional $3.6 million of previously deferred royalty revenue under the December 2017 DSM Value Sharing Agreement, as the remaining underlying performance obligation was fully satisfied through the April 16, 2019 assignment of the agreement to DSM. The Company recorded an additional $8.8 million of license and royalty revenue in the fourth quarter of 2019 related to a change in the estimated refund liability.

*DSM Performance Agreement*

In December 2017, in connection with the Company's divestiture of its Brotas, Brazil production facility (see Note 12, "Divestiture"), the Company and DSM entered into a performance agreement (Performance Agreement), pursuant to which the Company will provide certain research and development services to DSM relating to the development of the technology underlying the farnesene-related products to be manufactured at the Brotas facility in exchange for related funding, including certain bonus payments in the event that specific performance metrics are achieved. The Company will record the bonus payments as earned revenue upon the transfer of the developed technology to DSM. If the Company does not meet the established metrics under the Performance Agreement, the Company will be required to pay $1.8 million to DSM. The Performance Agreement will expire in December 2020, subject to the right of each of the parties to terminate for uncured material breach by the other party or in the event the other party is subject to bankruptcy proceedings, liquidation, dissolution or similar proceedings or other specified events.

*DSM December 2017 Supply Agreement and November 2018 Supply Agreement Amendment*

On November 19, 2018, the Company and DSM entered into an amendment (Supply Agreement Amendment) to the supply agreement, dated December 28, 2017 (Supply Agreement), by and between the Company and DSM. Under the Supply Agreement, DSM agreed to manufacture and supply to the Company certain products useful in the Company’s business, at prices and on production and delivery terms and specifications set forth in the Supply Agreement, which prices are based upon DSM’s manufacturing cost plus an agreed margin. The Supply Agreement originally provided that it would expire (i) with respect to non-farnesene related products, on the date that the Company’s planned new specialty ingredients manufacturing facility in Brazil is fully operational and meets its production targets, but in any event no later than December 31, 2021 and (ii) with respect to farnesene related products, on December 28, 2037, subject in each case to earlier termination in certain circumstances. Pursuant to the Supply Agreement Amendment, (i) the outside expiration date of the Supply Agreement with respect to non-farnesene related products was extended to December 31, 2022, with specified pricing terms added for products manufactured during 2022, (ii) DSM committed to produce certain non-farnesene related products for the Company for two months of each calendar year during the term of the Supply Agreement and (iii) the Company agreed to (A) pay DSM a cash

fee totaling $15.5 million, payable in installments during 2018 and 2019, (B) issue 1,643,991 shares of the Company's common stock to DSM, and (C) pay DSM a cash fee of $7.3 million, payable on or before March 29, 2019, plus, if the closing price of the Common Stock on the trading day immediately preceding the date of such payment is less than $4.41 per share, an amount equal to such deficiency multiplied by 1,643,991.

In addition, on April 16, 2019 the Company and DSM entered into amendments to the 2017 Supply Agreement and the 2017 Performance Agreement, as well as the Quota Purchase Agreement relating to the December 2017 sale of Amyris Brasil to DSM (see Note 12, "Divestiture"), pursuant to which (i) DSM agreed to reduce certain manufacturing costs and fees paid by the Company related to the production of farnesene under the Supply Agreement through 2021, as well as remove the priority of certain customers over the Company with respect to production capacity at the Brotas, Brazil facility, (ii) the Company agreed to provide DSM rights to conduct certain process and downstream recovery improvements under the Performance Agreement at facilities other than the Brotas, Brazil facility in exchange for DSM providing the Company with a license to such improvements and (iii) the Company released DSM from its obligation to provide manufacturing and support services under the Quota Purchase Agreement in connection with the Company's planned new manufacturing facility, which is no longer to be located at the Brotas, Brazil location.

*DARPA Technology Investment Agreement*

In September 2015, the Company entered into a technology investment agreement (TIA) with The Defense Advanced Research Projects Agency (DARPA), under which the Company, with the assistance of specialized subcontractors, is working to create new research and development tools and technologies for strain engineering and scale-up activities. The agreement is being funded by DARPA on a milestone basis. Under the TIA, the Company and its subcontractors could collectively receive DARPA funding of up to $35.0 million over the program's four year term if all of the program's milestones are achieved. In conjunction with DARPA's funding, the Company and its subcontractors are obligated to collectively contribute approximately $15.5 million toward the program over its four year term (primarily by providing specified labor and/or purchasing certain equipment). For the DARPA agreement, the Company recognizes revenue using an output-based measure of progress of the milestones completed relative to remaining milestones, once acknowledged by DARPA.

***Contract Assets and Liabilities***

When a contract results in revenue being recognized in excess of the amount the Company has invoiced or has the right to invoice to the customer, a contract asset is recognized. Contract assets are transferred to accounts receivable, net when the rights to the consideration become unconditional.

Contract liabilities consist of payments received from customers, or such consideration that is contractually due, in advance of providing the product or performing services such that control has not passed to the customer.

Trade receivables related to revenue from contracts with customers are included in accounts receivable on the consolidated balance sheets, net of the allowance for doubtful accounts. Trade receivables are recorded at the point of renewable product sale or in accordance with the contractual payment terms for licenses and royalties, and grants and collaborative research and development services for the amount payable by the customer to the Company for sale of goods or the performance of services, and for which the Company has the unconditional right to receive payment.

*Contract Balances*

The following table provides information about accounts receivable and contract liabilities from contracts with customers:

| **December 31,**<br>**(In thousands)** | **2019** | **2018** |
|---|---|---|
| Accounts receivable, net | $ 16,322 | $ 16,003 |
| Accounts receivable - related party, net | $ 3,868 | $ 1,349 |
| Accounts receivable, unbilled - related party | $ — | $ 8,021 |
| Contract assets | $ 8,485 | $ — |
| Contract assets, noncurrent - related party | $ 1,203 | $ 1,203 |
| Contract liabilities | $ 1,353 | $ 8,236 |
| Contract liabilities, noncurrent[(1)] | $ 1,449 | $ 1,587 |

(1) The balances in contract liabilities, noncurrent are included in other noncurrent liabilities on the consolidated balance sheets.

Unbilled receivables relate to the Company’s right to consideration from DSM for (i) minimum future royalties and (ii) a material right arising from a customer option for a future transfer of technology. The Company’s right to cash receipt for these minimum royalty amounts occurs on or before December 31, 2019, and the right to cash receipt for the customer option occurs on or before December 31, 2020.

Contract liabilities, current decreased by $6.9 million at December 31, 2019 resulting from collaboration and royalty amounts recognized as revenue during the year ended December 31, 2019 that was included in contract liabilities at the beginning of the period.

*Remaining Performance Obligations*

The following table provides information regarding the estimated revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially unsatisfied) based on the Company's existing agreements with customers as of December 31, 2019.

| (In thousands) | As of December 31, 2019 |
|---|---|
| 2020 | $ 56,719 |
| 2021 | 52,313 |
| 2022 | 30,483 |
| 2023 and thereafter | — |
| Total from all customers | $ 139,515 |

In accordance with the disclosure provisions of ASC 606, the table above excludes estimated future revenues for performance obligations that are part of a contract that has an original expected duration of one year or less or a performance obligation with variable consideration that is recognized using the sales-based royalty exception for licenses of intellectual property. Additionally, $181.0 million of estimated future revenue is excluded from the table above, as that amount represents constrained variable consideration.

## 10. Related Party Transactions

*Related Party Equity*

See Note 6, "Stockholders' Deficit" for details of these related party equity transactions:
- November 2018 DSM Securities Purchase Agreement
- August 2017 DSM Offering

*Related Party Debt*

See Note 4, "Debt" for details of these related party debt transactions:
- DSM Note (also see Note 12, "Divestiture")
- 2014 Rule 144A Convertible Notes
- August 2013 Financing Convertible Notes
- Foris LSA
- Foris $19 million Note
- Naxyris LSA

Related party debt was as follows:

| December 31, (in thousands) | 2019 Principal | 2019 Unaccreted Debt Discount | 2019 Net | 2018 Principal | 2018 Unaccreted Debt Discount | 2018 Net |
|---|---|---|---|---|---|---|
| DSM notes | $ 33,000 | $ (4,621) | $ 28,379 | $ 25,000 | $ (6,311) | $ 18,689 |
| Foris | | | | | | |
| Foris notes | 115,351 | (9,516) | 105,835 | — | — | — |
| 2014 Rule 144A convertible notes | — | — | — | 5,000 | (181) | 4,819 |
| | 115,351 | (9,516) | 105,835 | 5,000 | (181) | 4,819 |
| Naxyris note | 24,437 | (822) | 23,615 | — | — | — |
| Temasek 2014 Rule 144A convertible note | — | — | — | 10,000 | (435) | 9,565 |
| Total 2014 Rule 144A convertible note | 10,178 | — | 10,178 | 9,705 | (422) | 9,283 |
| | $ 182,966 | $ (14,959) | $ 168,007 | $ 49,705 | $ (7,349) | $ 42,356 |

The fair value of the derivative liabilities related to the related party Foris $19 million note, Foris LSA and Naxyris note as of December 31, 2019 and 2018 was $2.6 million and $0.0 million, respectively. The Company recognized losses from change in the fair value of these and previous debt-related derivative liabilities of $0.1 million and $8.5 million for the years ended December 31, 2019 and 2018, respectively; see Note 3, "Fair Value Measurement".

At December 31, 2018, Temasek was no longer a related party. However, the Company and Temasek were related parties when they entered into the 2014 Rule 144A convertible notes transaction, for which terms remained unchanged since the borrowing date.

*Related Party Revenue*

The Company recognized revenue from related parties and from all other customers as follows:

| Years Ended December 31, (In thousands) | 2019 Renewable Products | 2019 Licenses and Royalties | 2019 Grants and Collaborations | 2019 TOTAL | 2018 Renewable Products | 2018 Licenses and Royalties | 2018 Grants and Collaborations | 2018 TOTAL |
|---|---|---|---|---|---|---|---|---|
| Revenue from related parties: | | | | | | | | |
| DSM | $ 10 | $ 49,051 | $ 4,120 | $ 53,181 | $ 18 | $ 5,958 | $ 4,735 | $ 10,711 |
| Total | 46 | — | — | 46 | 342 | — | — | 342 |
| Novvi | — | — | — | — | — | — | — | — |
| Subtotal revenue from related parties | 56 | 49,051 | 4,120 | 53,227 | 360 | 5,958 | 4,735 | 11,053 |
| Revenue from all other customers | 59,816 | 4,992 | 34,522 | 99,330 | 33,238 | 1,700 | 17,613 | 52,551 |
| Total revenue from all customers | $ 59,872 | $ 54,043 | $ 38,642 | $ 152,557 | $ 33,598 | $ 7,658 | $ 22,348 | $ 63,604 |

See Note 9, "Revenue Recognition" for details of the Company's revenue agreements with DSM.

*Related Party Accounts Receivable*

Related party accounts receivable was as follows:

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| DSM | $ 3,868 | $ 1,071 |
| Novvi | — | 188 |
| Total | — | 90 |
| Related party accounts receivable, net | $ 3,868 | $ 1,349 |

In addition to the amounts shown above, there were the following amounts on the consolidated balance sheet at December 31, 2019 and December 31, 2018, respectively:

- $0 and $8.0 million of unbilled receivables from DSM, in Accounts receivable, unbilled - related party;

- $1.2 million of unbilled receivables from DSM in Contract assets, noncurrent - related party; and
- $3.3 million and $4.3 million of contingent consideration receivable from DSM in Other assets.

*Related Party Accounts Payable and Accrued Liabilities*

Amounts due to DSM were as follows:

- Accounts payable and accrued and other current liabilities of $14.0 million and $2.1 million at December 31, 2019 and 2018, respectively; and
- Other noncurrent liabilities of $3.8 million and $3.6 million at December 31, 2019 and 2018, respectively.

*Related Party DSM Transactions*

The Company is party to the following significant agreements (and related amendments) with related party DSM:

| Related to | Agreement | For Additional Information, See the Note Indicated |
|---|---|---|
| Debt | DSM Credit Agreement | 4. Debt |
| Debt | 2019 DSM Credit Agreement | 4. Debt |
| Divestiture | November 2017 Quota Purchase Agreement | 12. Divestiture |
| Divestiture | December 2017 DSM Transition Services Agreement | 12. Divestiture |
| Equity | August 2017 DSM Offering | 6. Stockholders' Deficit |
| Equity | November 2018 DSM Securities Purchase Agreement | 6. Stockholders' Deficit |
| Revenue | July and September 2017 Collaboration and Licensing Agreements | 9. Revenue Recognition |
| Revenue | December 2017 DSM Supply Agreement | 9. Revenue Recognition |
| Revenue | December 2017 DSM Value Sharing Agreement, as amended | 9. Revenue Recognition |
| Revenue | December 2017 DSM Performance Agreement | 9. Revenue Recognition |
| Revenue | November 2017 Intellectual Property License Agreement | 9. Revenue Recognition |
| Revenue | November 2018 Supply Agreement Amendment | 9. Revenue Recognition |

Concurrent with the sale of Amyris Brasil in December 2017, the Company and DSM entered into a series of commercial agreements including (i) a license agreement to DSM of its farnesene product for DSM to use in the Vitamin E and lubricant markets; (ii) a royalty agreement that DSM will pay the Company specified royalties representing a portion of the profit on the sale of Vitamin E produced from farnesene under the Nenter Supply Agreement assigned to DSM; (iii) a performance agreement, which provides an option for DSM to elect a technology transfer upon the achievement of certain development milestones associated with the optimization of farnesene strains; and (iv) a transition services agreement for the Company to provide finance, legal, logistics, and human resource services to support the Brotas facility under DSM ownership for a six-month period with a DSM option to extend for six additional months. See Note 12, “Divestiture” for further information regarding the sale of Amyris Brasil and the related commercial agreements. In addition, the Company entered into a credit agreement with DSM under which the Company borrowed $25 million; see Note 4, "Debt" for additional information.

In November 2018, the Company amended the supply agreement with DSM to secure capacity at the Brotas 1 facility for production of its alternative sweetener product through 2022. See Note 9, “Revenue Recognition” for information regarding the November 2018 Supply Agreement Amendment and the November 2018 DSM Securities Purchase Agreement. The Company also entered into other transactions with DSM in November 2018 which resulted in the Company (i) evaluating this series of November 2018 transactions and considering other certain transactions with DSM in 2018 as a combined arrangement, and (ii) determining and allocating the fair value to each element. The other transactions entered into concurrently with the November 2018 Supply Agreement Amendment and November 2018 DSM Securities Purchase Agreement included an agreement to finalize the working capital adjustments related to the Brotas 1 facility sale in December 2017 and an amendment to reduce the exercise price of the Cash Warrant issued to DSM in the August 2017 DSM Offering and to provide a waiver for any potential claims arising from failure to obtain consent prior to amending the exercise price of the August 2017 Vivo Cash Warrant in the August 2017 Warrant transaction.

The contractual consideration transferred to DSM under the combined arrangement was $34.7 million. The Company performed an analysis to determine the fair value of the elements and allocated the resulting $33.3 million total fair value as follows: (i) $24.4 million to the manufacturing capacity, (ii) $6.8 million to the legal settlement and related consent waiver and (iii) $2.1 million to the working capital adjustment. See Note 3, “Fair Value Measurement” for information related to this fair

value allocation. The $1.4 million excess consideration transferred above the combined arrangement's fair value was recorded as a reduction of royalty revenues in the year ended December 31, 2018. Of the $24.4 million fair value allocated to the manufacturing capacity, $3.3 million was recorded as deferred cost of products sold during 2018. Also, the Company paid an additional $14.1 million in manufacturing capacity fees during 2019, which were recorded as additional deferred cost of products sold. The remaining $7.0 million manufacturing capacity fees will be recorded as deferred cost of products sold in the period the additional payments are made to DSM. The deferred cost of products sold asset will be expensed on a units of production basis as products are sold over the five-year term of the supply agreement. On a quarterly basis, the Company evaluates its future production volumes for its sweetener product and adjusts the unit cost to be expensed over the remaining estimated production volume. The $6.8 million of fair value allocated to the legal settlement and related consent waiver was recorded as legal settlement expense for the year ended December 31, 2018. The $2.1 million of fair value allocated to the working capital adjustment was recorded as a loss on divestiture for the year ended December 31, 2018. The contractual consideration transferred to DSM exceeded the fair value of the elements received by $1.4 million and this excess was recorded as a reduction of licenses and royalties revenues in the three months ended December 31, 2018.

*Related Party Joint Venture*

In December 2016, the Company, Nikko Chemicals Co., Ltd. an existing commercial partner of the Company, and Nippon Surfactant Industries Co., Ltd., an affiliate of Nikko (collectively, Nikko) entered into a joint venture (the Aprinnova JV Agreement) pursuant to which the Company contributed certain assets, including certain intellectual property and other commercial assets relating to its business-to-business cosmetic ingredients business (the Aprinnova JV Business), as well as its Leland production facility. The Company also agreed to provide the Aprinnova JV with exclusive (to the extent not already granted to a third party), royalty-free licenses to certain of the Company's intellectual property necessary to make and sell products associated with the Aprinnova JV Business (the Aprinnova JV Products). Nikko purchased their 50% interest in the Aprinnova JV in exchange for the following payments to the Company: (i) an initial payment of $10.0 million and (ii) the profits, if any, distributed to Nikko in cash as members of the Aprinnova JV during the three-year period from 2017 to 2019, up to a maximum of $10.0 million.

The Aprinnova JV operates in accordance with the Aprinnova Operating Agreement under which the Aprinnova JV is managed by a Board of Directors consisting of four directors: two appointed by the Company and two appointed by Nikko. In addition, Nikko has the right to designate the Chief Executive Officer of the Aprinnova JV from among the directors and the Company has the right to designate the Chief Financial Officer. The Company determined that it has the power to direct the activities of the Aprinnova JV that most significantly impact its economic performance because of its (i) significant control and ongoing involvement in operational decision making, (ii) guarantee of production costs for certain Aprinnova JV products, as discussed below, and (iii) control over key supply agreements, operational and administrative personnel and other production inputs. The Company has concluded that the Aprinnova JV is a variable-interest entity (VIE) under the provisions of ASC 810, Consolidation, and that the Company has a controlling financial interest and is the VIE's primary beneficiary. As a result, the Company accounts for its investment in the Aprinnova JV on a consolidation basis in accordance with ASC 810.

Under the Aprinnova Operating Agreement, profits from the operations of the Aprinnova JV, if any, are distributed as follows: (i) first, to the Company and Nikko (the Members) in proportion to their respective unreturned capital contribution balances, until each Member's unreturned capital contribution balance equals zero and (ii) second, to the Members in proportion to their respective interests. In addition, any future capital contributions will be made by the Company and Nikko on an equal (50%/50%) basis each time, unless otherwise mutually agreed. For the year ended December 31, 2019, a $0.3 million distribution was made to Nikko and was recorded as a decrease in noncontrolling interest.

Pursuant to the Aprinnova JV Agreement, the Company and Nikko agreed to make initial working capital loans to the Aprinnova JV in the amounts of $0.5 million and $1.5 million, respectively, and again in 2019 with additional loans of $0.2 million each. Also in 2019, Nikko provided the Aprinnova JV with $1.2 million of short-term loans to purchase certain manufacturing supplies. These loans are described in more detail in Note 4, "Debt". In addition, the Company agreed to guarantee a maximum production cost for squalane and hemisqualane to be produced by the Aprinnova JV and to bear any cost of production above such guaranteed costs.

In connection with the contribution of the Leland Facility by the Company to the Aprinnova JV, at the closing of the formation of the Aprinnova JV, Nikko made a loan to the Company in the principal amount of $3.9 million, and the Company in consideration therefore issued a promissory note to Nikko in an equal principal amount, as described in more detail in Note 4, "Debt" under "Nikko Note."

The following presents the carrying amounts of the Aprinnova JV's assets and liabilities included in the accompanying consolidated balance sheets. Assets presented below are restricted for settlement of the Aprinnova JV's obligations and all liabilities presented below can only be settled using the Aprinnova JV resources.

| **December 31, (In thousands)** | **2019** | **2018** |
|---|---|---|
| Assets | $ 17,390 | $ 12,904 |
| Liabilities | $ 3,690 | $ 2,364 |

The Aprinnova JV's assets and liabilities are primarily comprised of inventory, property, plant and equipment, accounts payable and debt, which are classified in the same categories in the Company's consolidated balance sheets.

*Office Sublease*

The Company subleases certain office space to Novvi, for which the Company charged Novvi $0.6 million and $0.6 million for the years ended December 31, 2019 and 2018, respectively.

See Note 15, "Subsequent Events" for information regarding related party transactions subsequent to December 31, 2019.

### 11. Stock-based Compensation

***Stock-based Compensation Expense Related to All Plans***

Stock-based compensation expense related to all employee stock compensation plans, including options, restricted stock units and ESPP, was as follows:

| **Years Ended December 31, (In thousands)** | **2019** | **2018** |
|---|---|---|
| Research and development | $ 2,900 | $ 1,797 |
| Sales, general and administrative | 9,654 | 7,393 |
| Total stock-based compensation expense | $ 12,554 | $ 9,190 |

***Plans***

*2010 Equity Incentive Plan*

The Company's 2010 Equity Incentive Plan (2010 Equity Plan) became effective on September 27, 2010 and will terminate in 2020. The 2010 Equity Plan provides for the granting of common stock options, restricted stock awards, stock bonuses, stock appreciation rights, restricted stock units (RSUs) and performance awards. It allows for time-based or performance-based vesting for the awards. Options granted under the 2010 Equity Plan may be either incentive stock options (ISOs) or non-statutory stock options (NSOs). ISOs may be granted only to Company employees (including officers and directors who are also employees). NSOs may be granted to Company employees, non-employee directors and consultants. The Company will be able to issue no more than 2,000,000 shares pursuant to the grant of ISOs under the 2010 Equity Plan. Options under the 2010 Equity Plan may be granted for periods of up to ten years. All options issued to date have had a ten-year life. Under the plan, the exercise price of any ISOs and NSOs may not be less than 100% of the fair market value of the shares on the date of grant. The exercise price of any ISOs and NSOs granted to a 10% stockholder may not be less than 110% of the fair value of the underlying stock on the date of grant. The options and RSUs granted to-date generally vest over three to five years.

As of December 31, 2019 and 2018, options were outstanding to purchase 5,589,315 and 5,339,214 shares, respectively, of the Company's common stock granted under the 2010 Equity Plan, with weighted-average exercise prices per share of $8.89 and $9.62, respectively. In addition, as of December 31, 2019 and 2018, restricted stock units representing the right to receive 5,782,651 and 5,294,803 shares, respectively, of the Company's common stock granted under the 2010 Equity Plan were

outstanding. As of December 31, 2019 and 2018, 3,815,625 and 2,359,750 shares, respectively, of the Company's common stock remained available for future awards that may be granted under the 2010 Equity Plan.

The number of shares reserved for issuance under the 2010 Equity Plan increases automatically on January 1 of each year starting with January 1, 2011, by a number of shares equal to 5% of the Company's total outstanding shares as of the immediately preceding December 31. However, the Company's Board of Directors or the Leadership Development and Compensation Committee of the Board of Directors retains the discretion to reduce the amount of the increase in any particular year.

In May 2018, shareholders approved amendments to the 2010 Equity Plan to (i) increase the number of shares of common stock available for grant and issuance thereunder by 9.0 million shares and (ii) increase the annual per-participant award limit thereunder to 4.0 million shares. Subsequent to the amendments, the total number of shares available for grant was 9,280,000, not including the annual evergreen increases.

*2005 Stock Option/Stock Issuance Plan*

In 2005, the Company established its 2005 Stock Option/Stock Issuance Plan (2005 Plan) which provided for the granting of common stock options, restricted stock units, restricted stock and stock purchase rights awards to employees and consultants of the Company. The 2005 Plan allowed for time-based or performance-based vesting for the awards. Options granted under the 2005 Plan were ISOs or NSOs. ISOs were granted only to Company employees (including officers and directors who are also employees). NSOs were granted to Company employees, non-employee directors, and consultants.

All options issued under the 2005 Plan had a ten-year life. The exercise prices of ISOs and NSOs granted under the 2005 Plan were not less than 100% of the estimated fair value of the shares on the date of grant, as determined by the Board of Directors. The exercise price of an ISO and NSO granted to a 10% stockholder could not be less than 110% of the estimated fair value of the underlying stock on the date of grant as determined by the Board. The options generally vested over 5 years.

As of December 31, 2019 and 2018, options to purchase 31,104 and 52,389 shares, respectively, of the Company's common stock granted under the 2005 Plan remained outstanding, and as a result of the adoption of the 2010 Equity Plan discussed above, zero shares of the Company's common stock remained available for future awards issuance under the 2005 Plan. The options outstanding under the 2005 Plan as of December 31, 2019 and 2018 had a weighted-average exercise price per share of $259.19 and $185.93, respectively.

*2010 Employee Stock Purchase Plan*

The 2010 Employee Stock Purchase Plan (2010 ESPP) became effective on September 27, 2010. The 2010 ESPP is designed to enable eligible employees to purchase shares of the Company's common stock at a discount. Offering periods under the 2010 ESPP generally commence on each May 16 and November 16, with each offering period lasting for one year and consisting of two six-month purchase periods. The purchase price for shares of common stock under the 2010 ESPP is the lesser of 85% of the fair market value of the Company's common stock on the first day of the applicable offering period or the last day of each purchase period. During the life of the 2010 ESPP, the number of shares reserved for issuance increases automatically on January 1 of each year, starting with January 1, 2011, by a number of shares equal to 1% of the Company's total outstanding shares as of the immediately preceding December 31. However, the Company's Board of Directors or the Leadership Development and Compensation Committee of the Board of Directors retains the discretion to reduce the amount of the increase in any particular year. In May 2018, shareholders approved an amendment to the 2010 ESPP to increase the maximum number of shares of common stock that may be issued over the term of the ESPP by 1 million shares. No more than 1,666,666 shares of the Company's common stock may be issued under the 2010 ESPP and no other shares may be added to this plan without the approval of the Company's stockholders.

*2018 CEO Performance-based Stock Options*

In May 2018, the Company granted its chief executive officer performance-based stock options (PSOs) to purchase 3,250,000 shares. PSOs are equity awards with the final number of PSOs that may vest determined based on the Company's performance against pre-established EBITDA milestones and Amyris stock price milestones. The EBITDA milestones are measured from the grant date through December 31, 2021, and the stock price milestones are measured from the grant date through December 31, 2022. The PSOs vest in four tranches contingent upon the achievement of both the EBITDA milestones and stock price milestones for each respective tranche, and the chief executive officer's continued employment with the Company. Over the measurement periods, the number of PSOs that may be issued and the related stock-based compensation expense that is recognized is adjusted upward or downward based upon the probability of achieving the EBITDA milestones.

Depending on the probability of achieving the EBITDA milestones and stock price milestones and certification of achievement of those milestones for each vesting tranche by the Company's Board of Directors or Compensation Committee, the PSOs issued could be from zero to 3,250,000 stock options, with an exercise price of $5.08 per share.

Stock-based compensation expense for this award is recognized using a graded-vesting approach over the service period beginning at the grant date through December 31, 2022, as the Company's management has determined that certain EBITDA milestones are probable of achievement over the next four years as of December 31, 2019, The Company utilized a Monte Carlo simulation to estimate the grant date fair value of each tranche of the award which totaled $5.1 million. For the years ended December 31, 2019 and 2018, the Company recognized $0 and $0.7 million, respectively, of compensation expense for this award. The assumptions used to estimate the fair value of this award with performance and market vesting conditions were as follows:

| **Stock Option Award with Performance and Market Vesting Conditions:** | |
|---|---|
| Fair value of the Company's common stock on grant date | $ 5.08 |
| Expected volatility | 70 % |
| Risk-free interest rate | 2.75 % |
| Dividend yield | 0.0 % |

***Stock Option Activity***

Stock option activity is summarized as follows:

| **Year ended December 31,** | **2019** | **2018** |
|---|---|---|
| Options granted | 530,140 | 4,337,119 |
| Weighted-average grant-date fair value per share | $ 3.83 | $ 5.18 |
| Compensation expense related to stock options (in millions) | $ 2.0 | $ 2.6 |
| Unrecognized compensation costs as of December 31 (in millions) | $ 4.5 | $ 8.5 |

The Company expects to recognize the December 31, 2019 balance of unrecognized costs over a weighted-average period of 3.8 years. Future option grants will increase the amount of compensation expense to be recorded in these periods.

Stock-based compensation expense for stock options and employee stock purchase plan rights is estimated at the grant date and offering date, respectively, based on the fair-value using the Black-Scholes-Merton option pricing model. The fair value of employee stock options is amortized on a ratable basis over the requisite service period of the awards. The fair value of employee stock options and employee stock purchase plan rights was estimated using the following weighted-average assumptions:

| **Years Ended December 31,** | **2019** | **2018** |
|---|---|---|
| Expected dividend yield | —% | —% |
| Risk-free interest rate | 1.8% | 2.8% |
| Expected term (in years) | 6.9 | 6.9 |
| Expected volatility | 84% | 80% |

The expected life of options is based primarily on historical share option exercise experience of the employees for options granted by the Company. All options are treated as a single group in the determination of expected life, as the Company does not currently expect substantially different exercise or post-vesting termination behavior among the employee population. The risk-free interest rate is based on the U.S. Treasury yield for a term consistent with the expected life of the awards in effect at the time of grant. Expected volatility is based on the historical volatility of the Company's common stock. The Company has no history or expectation of paying dividends on common stock.

Stock-based compensation expense associated with options is based on awards ultimately expected to vest. At the time of an option grant, the Company estimates the expected future rate of forfeitures based on historical experience. These estimates are revised, if necessary, in subsequent periods if actual forfeiture rates differ from those estimates. If the actual forfeiture rate

is lower than estimated the Company will record additional expense and if the actual forfeiture is higher than estimated the Company will record a recovery of prior expense.

The Company's stock option activity and related information for the year ended December 31, 2019 was as follows:

| | Number of Stock Options | Weighted-average Exercise Price | Weighted-average Remaining Contractual Life (in years) | Aggregate Intrinsic Value (in thousands) |
|---|---|---|---|---|
| Outstanding - December 31, 2018 | 5,390,270 | $ 11.55 | 8.5 | $ 29 |
| Options granted | 530,140 | $ 3.83 | | |
| Options exercised | (7,445) | $ 3.60 | | |
| Options forfeited or expired | (292,546) | $ 17.18 | | |
| Outstanding - December 31, 2019 | 5,620,419 | $ 10.27 | 7.8 | $ 24 |
| Vested or expected to vest after December 31, 2019 | 5,037,260 | $ 10.88 | 7.7 | $ 23 |
| Exercisable at December 31, 2019 | 1,314,113 | $ 27.46 | 6.1 | $ 10 |

The aggregate intrinsic value of options exercised under all option plans was $0 and $0.2 million for the years ended December 31, 2019 and 2018, respectively, determined as of the date of option exercise.

***Restricted Stock Units Activity and Expense***

During the years ended December 31, 2019 and 2018, 2,996,660 and 5,452,664 RSUs, respectively, were granted with weighted-average service-inception date fair value per unit of $3.96 and $5.36, respectively. The Company recognized RSU-related stock-based compensation expense of $10.2 million and $6.4 million, respectively, for the years ended December 31, 2019 and 2018. As of December 31, 2019 and 2018, unrecognized RSU-related compensation costs totaled $22.3 million and $23.8 million, respectively.

Stock-based compensation expense for RSUs is measured based on the closing fair market value of the Company's common stock on the date of grant.

The Company's RSU and restricted stock activity and related information for the year ended December 31, 2019 was as follows:

| | Number of Restricted Stock Units | Weighted-average Grant-date Fair Value | Weighted-average Remaining Contractual Life (in years) |
|---|---|---|---|
| Outstanding - December 31, 2018 | 5,294,803 | $ 5.50 | 1.4 |
| Awarded | 2,996,660 | $ 3.96 | |
| Vested | (1,891,931) | $ 5.51 | |
| Forfeited | (616,881) | $ 4.84 | |
| Outstanding - December 31, 2019 | 5,782,651 | $ 4.77 | 1.7 |
| Vested or expected to vest after December 31, 2019 | 5,338,558 | $ 4.78 | 1.6 |

***ESPP Activity and Expense***

During the years ended December 31, 2019 and 2018, 318,490 and 246,230 shares, respectively, of the Company's common stock were purchased under the 2010 ESPP. At December 31, 2019 and 2018, 263,797 and 199,463 shares, respectively, of the Company's common stock remained reserved for issuance under the 2010 ESPP.

During the years ended December 31, 2019 and 2018, the Company also recognized ESPP-related stock-based compensation expense of $0.4 million and $0.2 million, respectively.

## 12. Divestiture

On December 28, 2017, the Company completed the sale of its subsidiary Amyris Brasil Ltda. (Amyris Brasil), which operated the Company's production facility located in Brotas, Brazil, to DSM and concurrently entered into a series of commercial agreements and a credit agreement with DSM. At closing, the Company received $33.0 million in contractual cash consideration for the capital stock of Amyris Brasil, which was subject to certain post-closing working capital adjustments; and reimbursements contingent upon DSM's utilization of certain Brazilian tax benefits it acquired with its purchase of Amyris Brasil. The Company used $12.6 million of the cash proceeds received to repay certain indebtedness of Amyris Brasil. The total fair value of the contractual consideration received by the Company for Amyris Brasil was $56.9 million and resulted in a pretax gain of $5.7 million from continuing operations. In November 2018, the Company paid DSM $1.8 million related to the final post-closing working capital adjustment. In connection with the payment, $1.8 million was recorded as a loss on divestiture in the 2018 consolidated statement of operations, in the line captioned "(Loss) gain on divestiture".

Concurrent with the sale of Amyris Brasil, the Company and DSM entered into a series of commercial agreements including (i) a license agreement to DSM of its farnesene product for DSM to use in the Vitamin E and lubricant markets; (ii) a royalty agreement, pursuant to which DSM agreed to pay the Company specified royalties representing a portion of the profit on the sale of Vitamin E produced from farnesene sold under the Nenter Supply Agreement assigned to DSM; (iii) a performance agreement for the Company to perform research and development to optimize farnesene for production and sale of farnesene products; and (iv) a transition services agreement for the Company to provide finance, legal, logistics, and human resource services to support the Brotas facility under DSM ownership for a six-month period with a DSM option to extend for six additional months (see Note 9, "Revenue Recognition" for additional information). At closing, DSM paid the Company a $27.5 million nonrefundable license fee and a $15.0 million nonrefundable royalty payment, and agreed to pay two additional future nonrefundable minimum annual royalty payments totaling $18.1 million for 2019 and 2020 royalties. These future payments were determined to be fixed and determinable with a fair value of $17.8 million and were included as part of the total consideration subject to allocation in the December 2017 multiple-element divestiture transaction with DSM. In June 2018, the Company received the 2019 non-refundable minimum royalty payment of $9.3 million (net of a $0.7 million early payment discount) and in March 2019, the Company received the 2020 payment of $7.4 million (net of a $0.7 million early payment discount). See Note 9, "Revenue Recognition" and Note 10, "Related Party Transactions" for a full listing and details of agreements entered into with DSM. Additionally, the Company and DSM entered into a $25.0 million credit agreement that the Company used to repay all outstanding amounts under the Guanfu Note; see Note 4, "Debt" for additional information.

The Company accounted for the sale of Amyris Brasil as a sale of a business for proceeds of $54.8 million. The agreements entered into concurrently with the sale of Amyris Brasil including the license agreement, royalty agreement, performance agreement, transition services agreement, and credit agreement contain various elements and, as such, are deemed to be an arrangement with multiple deliverables as defined under U.S. GAAP. The Company performed an analysis to determine the fair value for all elements in the agreements with DSM and separated the elements between the non-revenue and revenue elements. After allocating the total fair value of the non-revenue elements from the fixed and determinable consideration received, the Company allocated the remaining fixed and determinable consideration to the revenue elements based on relative fair value. As such, the Company recognized $54.7 million of license revenue and $2.1 million of deferred revenue related to the performance option and transition services agreements with DSM as of December 31, 2017.

## 13. Income Taxes

The components of loss before income taxes are as follows:

| Years Ended December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| United States | $ (227,614) | $ (218,109) |
| Foreign | (14,524) | (12,125) |
| Loss before income taxes | $ (242,138) | $ (230,234) |

The components of the provision for income taxes are as follows:

| Years Ended December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| Current: | | |
| Federal | $ 621 | $ — |
| State | — | — |
| Foreign | 8 | — |
| Total current provision | 629 | — |
| Deferred: | | |
| Federal | — | — |
| State | — | — |
| Foreign | — | — |
| Total deferred benefit | — | — |
| Total provision for income taxes | $ 629 | $ — |

A reconciliation between the statutory federal income tax and the Company's effective tax rates as a percentage of loss before income taxes is as follows:

| Years Ended December 31, | 2019 | 2018 |
|---|---|---|
| Statutory tax rate | (21.0)% | (21.0)% |
| Federal R&D credit | (0.7)% | (0.6)% |
| Derivative liability | 4.7 % | 4.3 % |
| Nondeductible interest | 1.0 % | 1.0 % |
| Other | 2.4 % | (0.1)% |
| Foreign losses | 0.9 % | 0.9 % |
| Change in valuation allowance | 13.0 % | 15.5 % |
| Effective income tax rate | 0.3 % | — % |

Temporary differences and carryforwards that gave rise to significant portions of deferred taxes are as follows:

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| Net operating loss carryforwards | $ 88,513 | $ 57,921 |
| Property, plant and equipment | 8,239 | 9,269 |
| Research and development credits | 15,002 | 12,046 |
| Foreign tax credit | — | — |
| Accruals and reserves | 13,934 | 8,526 |
| Stock-based compensation | 6,164 | 6,496 |
| Disallowed interest carryforward | 7,072 | 2,359 |
| Capitalized research and development costs | 21,723 | 27,888 |
| Intangible and others | 2,503 | 3,114 |
| Equity investments | 304 | 156 |
| Total deferred tax assets | 163,454 | 127,775 |
| Operating leases right-of-use assets | (2,643) | — |
| Debt discount and derivatives | (7,176) | (3,750) |
| Total deferred tax liabilities | (9,819) | (3,750) |
| Net deferred tax assets prior to valuation allowance | 153,635 | 124,025 |
| Less: valuation allowance | (153,635) | (124,025) |
| Net deferred tax assets | $ — | $ — |

Activity in the deferred tax assets valuation allowance is summarized as follows:

| (In thousands) | Balance at Beginning of Year | Additions | Reductions / Charges | Balance at End of Year |
|---|---|---|---|---|
| Deferred tax assets valuation allowance: | | | | |
| Year ended December 31, 2019 | $ 124,025 | $ 29,610 | $ — | $ 153,635 |
| Year ended December 31, 2018 | $ 81,086 | $ 42,939 | $ — | $ 124,025 |

Recognition of deferred tax assets is appropriate when realization of such assets is more likely than not. Based on the weight of available evidence, especially the uncertainties surrounding the realization of deferred tax assets through future taxable income, the Company believes that it is more likely than not that the net deferred tax assets will not be fully realizable. Accordingly, the Company has provided a full valuation allowance against its net deferred tax assets as of December 31, 2019 and 2018. The valuation allowance increased by $42.9 million during the year ended December 31, 2018 and increased by $29.6 million during the year ended December 31, 2019.

As of December 31, 2019, the Company had federal net operating loss carryforwards of approximately $411.3 million and state net operating loss carryforwards $158.1 million, available to reduce future taxable income, if any. The Internal Revenue Code of 1986, as amended, imposes restrictions on the utilization of net operating losses in the event of an "ownership change" of a corporation. Accordingly, a company's ability to use net operating losses may be limited as prescribed under Internal Revenue Code Section 382 (IRC Section 382). Events that may cause limitations in the amount of the net operating losses that the Company may use in any one year include, but are not limited to, a cumulative ownership change of more than 50% over a three-year period. During the year ended December 31, 2019, the Company experienced a cumulative ownership change of greater than 50%. As such, net operating losses generated prior to that change are subject to an annual limitation on their use. Due to the limitations imposed, the Company wrote-off $396.5 million of federal NOL carryover and $90.6 million of state NOL carryover that is expected to expire before it can be utilized. Additionally, the Company wrote-off $14.4 million of its historical federal research and development credit carryovers as a result of the limitations. As of December 31, 2019, the Company had foreign net operating loss carryovers of approximately $22.0 million.

As of December 31, 2019, the Company had federal research and development credit carryforwards of $3.3 million and California research and development credit carryforwards of $15.2 million.

If not utilized, the federal net operating loss carryforward will begin expiring in 2034, and the California net operating loss carryforward will begin expiring in 2031. The federal research and development credit carryforwards will expire starting in 2037 if not utilized. The California research and development credit carryforwards can be carried forward indefinitely.

A reconciliation of the beginning and ending amounts of unrecognized tax benefits is as follows:

| (In thousands) | |
|---|---|
| Balance at December 31, 2017 | $ 28,833 |
| Increases in tax positions for prior period | 55 |
| Increases in tax positions during current period | 1,239 |
| Balance at December 31, 2018 | 30,127 |
| Increases in tax positions for prior period | — |
| Increases in tax positions during current period | 1,411 |
| Balance at December 31, 2019 | $ 31,538 |

The Company's policy is to include interest and penalties related to unrecognized tax benefits within the provision for taxes. The Company accrued $0.6 million and $0 for interest as of December 31, 2019 and 2018, respectively.

None of the unrecognized tax benefits, if recognized, would affect the effective income tax rate for any of the above years due to the valuation allowance that currently offsets deferred tax assets. The Company does not anticipate that the total amount of unrecognized income tax benefits will significantly increase or decrease in the next 12 months.

The Company's primary tax jurisdiction is the United States. For United States federal and state tax purposes, returns for tax years 2006 and forward remain open and subject to tax examination by the appropriate federal or state taxing authorities. Brazil tax years 2011 and forward remain open and subject to examination.

As of December 31, 2019, the U.S. Internal Revenue Service (the IRS) has completed its audit of the Company for tax year 2008 and concluded that there were no adjustments resulting from the audit. While the statutes are closed for tax year 2008, the U.S. federal tax carryforwards (net operating losses and tax credits) may be adjusted by the IRS in the year in which the carryforward is utilized.

## 14. Geographical Information

The chief operating decision maker is the Company's Chief Executive Officer, who makes resource allocation decisions and assesses performance based on financial information presented on a consolidated basis. There are no segment managers who are held accountable by the chief operating decision maker, or anyone else, for operations, operating results, and planning for levels or components below the consolidated unit level. Accordingly, the Company has determined that it has a single reportable segment and operating segment structure.

*Revenue*

Revenue by geography, based on each customer's location, is shown in Note 9, "Revenue Recognition".

*Property, Plant and Equipment*

| December 31, (In thousands) | 2019 | 2018 |
|---|---|---|
| United States | $ 13,799 | $ 10,404 |
| Brazil | 14,277 | 6,447 |
| Europe | 854 | 198 |
| | $ 28,930 | $ 17,049 |

## 15. Subsequent Events

*Warrants Exercises for Cash*

On January 13, 2020 Foris Ventures, LLC (Foris), an entity affiliated with director John Doerr and which beneficially owns greater than 5% of the Company's outstanding common stock, delivered to the Company an irrevocable notice of cash exercise with respect to a warrant to purchase 4,877,386 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to a warrant issued by the Company on August 17, 2018. On January 14, 2020, the Company received approximately $14.0 million from Foris in connection with the warrant exercise representing 4,877,386 shares of common stock.

On March 11, 2020 Foris provided to the Company a notice of cash exercise to purchase 5,226,481 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to the PIPE Rights (discussed in the January 2020 Private Placement section below) issued by the Company on January 31, 2020. On March 12, 2020, the Company received approximately $15.0 million from Foris in connection with the PIPE Rights exercise.

*Exchange of Senior Convertible Notes Due 2022*

On January 14, 2020, the Company completed the exchange, pursuant to separate exchange agreements (the Exchange Agreements) with certain private investors (the Holders), of the Company's Senior Convertible Notes Due 2022 (or the Prior Notes) for (i) new senior convertible notes in an aggregate principal amount of $51 million (the New Notes or New Senior Convertible Notes due 2022), (ii) an aggregate of 2,742,160 shares of Common Stock (the Exchange Shares), (iii) rights (the Rights) to acquire up to an aggregate of 2,484,321 shares of Common Stock, (iv) warrants (the Warrants) to purchase up to an aggregate of 3,000,000 shares of Common Stock (the Warrant Shares) at an exercise price of $3.25 per share, with an exercise term of two years from issuance, (v) accrued and unpaid interest on the Senior Convertible Notes Due 2022 (payable on or prior to January 31, 2020) and (vi) cash fees in an aggregate amount of $1.0 million (payable on or prior to January 31, 2020).

The New Notes have substantially similar terms as the Prior Notes, except that (i) the Company would not be required to redeem the New Notes in an aggregate principal amount of $10 million on December 31, 2019, (ii) the Company would only be required to redeem the New Notes in an aggregate amount of $10 million following the receipt by the Company of at least $80 million of aggregate net cash proceeds from one or more financing transactions, and at a price of 107% of the amount being redeemed, (iii) the financing activity requirement was reduced such that the Company would only be required to raise aggregate net cash proceeds of $50 million from one or more financing transactions by January 31, 2020, (iv) the Company would have until January 31, 2020 to comply with certain covenants related to the repayment, conversion or exchange into equity or amendment of certain outstanding indebtedness of the Company, and (v) the deadline for the Company to seek the Stockholder Approval would be extended from January 31, 2020 to March 15, 2020.

On February 18, 2020, the Company and the Holders entered into separate waiver and forbearance agreements, (the W&F Agreements), pursuant to which the Holders agreed to, for 60 days following the date of the W&F Agreement, except in case of early termination of the W&F Agreement or, solely with respect to the Stockholder Approval if the other defaults described below have been cured on or prior to the date that is 60 days following the date of the W&F Agreement, until May 31, 2020 (the W&F Period), and in each case subject to certain conditions to effectiveness contained in the W&F Agreement, (i) forbear from exercising certain of their rights and remedies with respect to certain defaults by the Company, including, but not limited to, the Company's failure, on or before January 31, 2020, (A) to receive aggregated net cash proceeds of not less than $50 million from one or more financing transactions, (B) to repay in full or convert into equity all indebtedness outstanding under the Schottenfeld September Credit Agreement and the Schottenfeld November Credit and Security Agreement or amend all such indebtedness outstanding to fit within the definition of permitted indebtedness of the New Notes, and certain other events of default, and (ii) waive any event of default for (A) violations of the minimum liquidity covenant since December 31, 2019 and (B) failure to obtain the Stockholder Approval prior to March 15, 2020.

In addition, pursuant to the W&F Agreements, the Company and the Holders agreed that (i) the New Note amortization payment due on March 1, 2020 (the Amortization Payment) shall be in the aggregate amount of $10.0 million (split proportionally among the Holders) and that the Company shall elect to pay such amortization payment in shares of Common Stock in accordance with the terms of the New Note, provided however, that: (A) the Amortization Stock Payment Price (as defined in the New Note) shall be $3.00, (B) the Amortization Share Payment Period (as defined in the New Note) with respect to the Amortization Payment will end on April 30, 2020 rather than March 31, 2020; and (C) in the event that Holder does not elect to receive the full Amortization Share Amount (as defined in the New Note) during such Amortization Share Payment Period, then the Amortization Payment shall be automatically reduced by the portion of such Amortization Payment not received by the Holder, (ii) there shall be no amortization payment due on April 1, 2020, and (iii) the amortization payment due on May 1, 2020 shall be in the aggregate amount of $8.9 million (split proportionally among the Holders).

On February 24, 2020, a Holder of the Rights notified the Company about the exercise of the Rights for the issuance of an aggregate of 2,484,321 shares of common stock, which were issued by the Company according to the terms of the Senior Convertible Notes Due 2022.

*January 2020 Warrant Amendments and Exercises, Debt Equitization and PIPE*

As described below in further detail, on January 31, 2020, the Company completed a series of transactions that resulted in the Company (i) receiving $28.3 million in cash, (ii) reducing its aggregate debt principal by $60.0 million and accrued interest by approximately $10.0 million, (iii) issuing an aggregate of (A) 25,326,095 shares of common stock as a result of the exercise of outstanding warrants, and (B) 13,989,973 new shares of common stock in private placements, and (iv) issuing rights to purchase an aggregate of 18,649,961 shares of common stock, at an exercise price of $2.87 per share, for an exercise term of 12 months.

Warrant Amendments

On January 31, 2020, the Company entered into separate warrant amendment agreements (the Warrant Amendments) with Foris and certain other holders (the Warrant Holders) of the Company's outstanding warrants to purchase shares of the Company's common stock, pursuant to which the exercise price of certain warrants (the Amended Warrants) held by the Warrant Holders totaling 1.2 million shares and Foris totaling 10.2 million shares was reduced to $2.87 per share upon the exercise of the Amended Warrant.

Warrant Exercises by Certain Holders

In connection with the entry into the Warrant Amendments, on January 31, 2020 the Warrant Holders delivered to the Company irrevocable notices of cash exercise with respect to their Amended Warrants, representing an aggregate of 1,160,929 shares of Common Stock (the Warrant Amendment Shares), and the Company issued to the Holders rights to purchase an aggregate of 1,160,929 shares of Common Stock, at an exercise price of $2.87 per share, for an exercise term of twelve months

from the January 31, 2020 issuance (the Rights). The Company received net proceeds of $3.3 million from the exercise of the Amended Warrants and issued to the Holders the Warrant Amendment Shares.

Warrant Exercise, Common Stock Purchase and Debt Equitization by Foris – Related Party

On January 31, 2020, the Company and Foris entered into a warrant exercise agreement (the Exercise Agreement) pursuant to which (i) Foris (A) exercised all of its then outstanding common stock purchase warrants (the Foris Warrants), totaling 19,287,780 shares of Common Stock (the Foris Warrant Shares), at a weighted average exercise price of approximately $2.84 per share (following the Warrant Amendments noted above) for an aggregate exercise price of $54.8 million (the Exercise Price), and (B) purchased 5,279,171 shares of Common Stock (the Foris Shares), at $2.87 per share for a total purchase price of $15.2 million (Purchase Price), (ii) Foris paid the Exercise Price and the Purchase Price through the cancellation of $70 million of principal and accrued interest owed by the Company to Foris under the Foris $19 million Note and the Foris LSA (as discussed in Note 4, "Debt") and (iii) the Company issued to Foris the Foris Shares and an additional right to purchase 8,778,230 shares of Common Stock at a purchase price of $2.87 per share, for a period of 12 months from the Exercise Agreement.

January 2020 Private Placement

On January 31, 2020 the Company entered into separate Security Purchase Agreements (the Purchase Agreements) with certain accredited investors (the Investors), including Foris, for the issuance and sale of an aggregate of 8,710,802 shares of Common Stock (the PIPE Shares) and rights to purchase an aggregate of 8,710,802 shares of Common Stock (the PIPE Rights) at a purchase price of $2.87 per share, for a period of 12 months for an aggregate purchase price of $25 million.

*Evergreen Shares for 2010 Equity Incentive Plan and 2010 Employee Stock Purchase Plan*

In February 2020, the Company's Board of Directors (the Board) approved increases to the number of shares available for issuance under the Company's 2010 Equity Incentive Plan (the Equity Plan) and 2010 Employee Stock Purchase Plan (the Purchase Plan). These shares in connection with the Equity Plan represented an automatic annual increase in the number of shares available for grant and issuance under the Equity Plan of 5,887,133 shares and under the Purchase Plan of 588,713 shares. These increases correspond to approximately 5.0% and 0.5%, respectively, of the total outstanding shares of the Company’s common stock as of December 31, 2019. These automatic increases are effective as of January 1, 2020.

*Schottenfeld Forbearance Agreement*

The Company and Schottenfeld Opportunities Fund II, L.P. (Schottenfeld) and certain of its affiliates (collectively, the Lenders) are parties (i) to certain Credit Agreements, each dated September 10, 2019 (collectively, the September Credit Agreements) and (ii) to a Credit and Security Agreement, dated November 14, 2019 (the CSA, and collectively with the September Credit Agreements, the Credit Agreements), pursuant to which the Company issued to the Lenders certain notes (the September Notes and the November Notes, respectively, and collectively, the Schottenfeld Notes) and warrants (the September Warrants and the November Warrants, respectively, and collectively, the Shottenfeld Warrants) to purchase shares (the Warrant Shares) of the Company’s common stock.  See Not 4, “Debt” for further information.

On February 28, 2020, the Company entered into a forbearance agreement with the Lenders, pursuant to which the Lenders would forbear, for 60 days from the date of the Forbearance Agreement, unless terminated earlier (the Forbearance Period), to exercise certain rights under the Credit Agreement as a result of the Company’s defaults under the Credit Agreements and related Schottenfeld Notes, including the failure of the Company to (i) to pay all principal and accrued interest on the November Notes at the maturity date, (ii) the failure to pay on or before December 31, 2019, all accrued and unpaid interest through December 31, 2019 on the September Notes, and (iii) the failure, on or before December 15, 2019, to convert or exchange at least $60 million, but not less than 100%, of certain junior outstanding indebtedness into equity in the Company, and certain other events of default. Under the forbearance agreement the Company agreed to (i) pay a late fee of 5% on any obligations under the November Notes not paid in full on or before the last day of the Forbearance Period; (ii) pay on or prior to the  earliest to occur of April 19, 2020 or the last day of the Forbearance Period, (A) all interest due pursuant to the November Notes and the September Notes, plus all interest accruing on such unpaid interest, plus all interest accrued on account of the November Notes and the September Notes from the date of the Forbearance Agreement through the date of such payment, and (B) a forbearance fee in the amount of $150,000; (iii) pay, upon signature of the Forbearance Agreement, $150,000 as a partial payment of the interest that has accrued pursuant to the November Notes and the September Notes as of the date of the Forbearance Agreement; (iv) amended the Schottenfeld Warrants to (A) reduce the exercise price of each Schottenfeld Warrant to $2.87 per share, and (B) with respect to the November Warrants, extend the deadline to register the Warrant Shares for resale by the holders thereof.

*Ginkgo Waiver Agreement*

On March 11, 2020, the Company and Ginkgo Bioworks, Inc. (Ginkgo) entered into a Waiver Agreement and Amendment to Partnership Agreement (the Ginkgo Waiver), pursuant to the terms of (i) the Ginkgo promissory note dated October 20, 2017, issued by the Company to Ginkgo (as amended, the Ginkgo Note), (ii) the Ginkgo Partnership Agreement, dated October 20, 2017, by and between the Company and Ginkgo, and (iii) the Waiver Agreement and Amendment to Ginkgo Note, dated September 29, 2019, by and between the Company and Ginkgo.

Ginkgo agreed to (i) waive the Company's failure (a) to pay past due interest and partnership payments, including interest thereon of $6.7 million, and (b) to comply with a reporting covenant prior to March 31, 2020, (iii) to make a prior waiver fee payment of $0.5 million on December 15, 2019, (ii) waive any cross defaults due to events of default under other debt obligations by the Company, and (iii) amend payments on the Ginkgo Partnership Agreement beginning on March 31, 2020 to a monthly payment of $0.5 million through and including October 31, 2021.

*Total Note Extension Agreement*

On March 11, 2020, the Company and Total Raffinage Chimie (Total) entered into a Senior Convertible Note Maturity Extension Agreement that resulted in the reissuance of the December 20, 2019 promissory note under which the Company owed Total $10.2 million plus accrued interest. Under the terms of the Senior Convertible Note Maturity Extension Agreement, the Company paid Total $1.5 million to satisfy all accrued but unpaid interest and to reduce the principal balance of the reissued note by $1.1 million. The reissued note has (i) a maturity date of March 31, 2020, (ii) a $9.1 million principal amount due, (iii) accrues interest at a rate of 12.0% per annum maturity date and (iv) terms substantially identical to the December 20, 2019 promissory note.

*Nikko Amendment to Loan Agreement*

On March 12, 2020, the Company and Nikko Chemicals Co. Ltd. (Nikko), entered into an amendment to the Loan Agreement dated December 19, 2019, under which the Company borrowed $4.5 million from Nikko (the Nikko Loan). Under the terms of the amendment, the Company paid Nikko $0.5 million to reduce the principal balance of the Loan Agreement to $4.0 million, the maturity date of the amended Loan Agreement was extended to March 31, 2020, with an increase in the interest rate to 8.0% per annum, and other terms substantially identical to the December 19, 2019 Nikko Loan.

**Selected Quarterly Financial Data**

Not applicable for smaller reporting companies.

## ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

## ITEM 9A. CONTROLS AND PROCEDURES

### (a) *Evaluation of Disclosure Controls and Procedures*

We maintain disclosure controls and procedures (as that term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934 (the Exchange Act) that are designed to provide reasonable assurance that information required to be disclosed in our reports under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the U.S. Securities and Exchange Commission's rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer (CEO) and interim chief financial officer (CFO) and, as appropriate, to allow timely decisions regarding required disclosures.

In connection with the preparation of this Annual Report on Form 10-K, we carried out an evaluation under the supervision of and with the participation of management, including our CEO and CFO, as of December 31, 2019, of the effectiveness of the design and operation of our disclosure controls and procedures. Based upon this evaluation, our CEO and CFO concluded that as of December 31, 2019, our disclosure controls and procedures were not effective because of the material weakness in our internal control over financial reporting described below.

To address the material weakness described below, management performed additional analysis and other procedures to ensure that our consolidated financial statements were prepared in accordance with U.S. GAAP. Accordingly, management believes that the consolidated financial statements and disclosures included in this Annual Report on Form 10-K fairly present,

in all material respects, in accordance with U.S. GAAP, our financial position, results of operations and cash flows for the periods presented.

**(b) *Management's Annual Report on Internal Control over Financial Reporting***

Our management is responsible for establishing and maintaining adequate internal control over financial reporting and for the assessment of the effectiveness of internal control over financial reporting as defined in Rule 13a-15(f) under the Exchange Act. Our internal control over financial reporting is a process designed by and under the supervision of our CEO and CFO and effected by our board of directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with U.S. GAAP. Our internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of the financial statements in accordance with U.S. GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of Company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

A "material weakness" is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

Management, under the supervision of our CEO and CFO, and oversight of the board of directors, conducted an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2019, based on the criteria set forth in Internal Control–Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO 2013 Framework). Based on this assessment, management has identified the following control deficiency as follows:

- The Company did not have an effective internal and external information and communication process to ensure that relevant and reliable information was communicated timely across the organization, to enable financial personnel to effectively carry out their financial reporting and internal control roles and responsibilities.

As a consequence of the ineffective communication components, the Company did not design, implement, and maintain effective control activities at the transaction level over debt-related liability accounts to mitigate the risk of material misstatement in financial reporting, specifically:

- The Company did not design and operate effective controls over significant non-routine transactions related to certain debt-related contractual obligations.

The control deficiency creates a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements would not be prevented or detected on a timely basis. Therefore, we concluded that this control deficiency is a material weakness and our internal control over financial reporting is not effective as of December 31, 2019.

The Company's independent registered public accounting firm, Macias, Gini & O'Connell, LLP, who audited the consolidated financial statements included in this annual report, has issued an adverse audit report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019, as shown below. Macias, Gini & O'Connell, LLP's report on the consolidated financial statements appears under Part II, Item 8 of this Annual Report on Form 10-K.

**(c) *Changes in Internal Control over Financial Reporting***

Except for the material weakness discussed above in this Item 9A that were identified in the fourth quarter (and that arose in an earlier period), there were no changes in our internal control over financial reporting during the fourth quarter of 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

**(d) *Remediation Plan***

Management has begun implementing a plan to assess risks of material misstatement over financial reporting, including the enhancement of internal control activities. The plan will be accomplished by the execution of the following:

- Management will enhance internal communication processes through the formalization of internal control documentation.

We believe these activities will remediate the control deficiency identified above and strengthen our internal control over financial reporting. Management, with the oversight of the Audit Committee, has dedicated incremental resources to successfully implement and test effectiveness of the enhanced controls throughout 2020.

As we continue to evaluate and work to improve our internal control over financial reporting, management may determine to take additional measures to address control deficiencies or determine to modify the remediation plan described above. We cannot be certain, however, that we will effectively remediate such material weakness or when we will do so, nor can we be certain of whether additional actions will be required or the costs of any such actions. In designing and evaluating disclosure controls and procedures and internal control over financial reporting, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures and internal control over financial reporting must reflect the fact that there are resource constraints and that management is required to apply judgement in evaluating the benefits of possible controls and procedures relative to their cost.

**Report of Independent Registered Public Accounting Firm**

To the Board of Directors and Stockholders of Amyris, Inc.

**Opinion on Internal Control over Financial Reporting**

We have audited the internal control over financial reporting of Amyris, Inc. and Subsidiaries (the "Company") as of December 31, 2019, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We do not express an opinion or any other form of assurance on management's statements referring to any corrective actions taken by the company after the date of management's assessment.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets as of December 31, 2019 and 2018 and the related consolidated statement of operations, comprehensive loss, stockholders' deficit and mezzanine equity and cash flow for each of the two years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements") and our report dated March 13, 2020 expressed an unqualified opinion thereon.

**Basis for Opinion**

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Item 9A, management's annual report on internal control over financial reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. A material weakness has been identified and an identification of the material weakness described in management's assessment in Item 9A. The material weakness related to information and communication, as to the lack of processes to ensure that relevant and reliable information was communicated timely across the organization, to enable financial personnel to effectively carry out their financial reporting and internal control roles and responsibilities.

This material weakness contributed to the Company not retaining the required documentation to demonstrate the consistent and timely operation of the controls at a sufficient level of precision to prevent and detect potential misstatements and did not design and operate effective controls over complex, significant, non-routine transactions related to certain debt-related contractual obligations. This material weakness was considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 consolidated financial statements, and this report does not affect our report dated March 13, 2020 on those financial statements.

**Definition and Limitations of Internal Control over Financial Reporting**

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with both generally accepted accounting principles and regulatory reporting instructions. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with both generally accepted accounting principles and regulatory reporting instructions, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Macias Gini & O’Connell LLP

San Francisco, California
March 13, 2020

**ITEM 9B. OTHER INFORMATION**

None.

## PART III

Certain information required by Part III is omitted from this Form 10-K because the registrant will file with the U.S. Securities and Exchange Commission a definitive proxy statement pursuant to Regulation 14A of the Exchange Act in connection with the solicitation of proxies for the Company's 2020 Annual Meeting of Stockholders (the 2020 Proxy Statement) within 120 days after the end of the fiscal year covered by this Form 10-K, and certain information included therein is incorporated herein by reference.

### ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required under this Item 10 is incorporated by reference to the 2020 Proxy Statement.

### ITEM 11. EXECUTIVE COMPENSATION

The information required under this Item 11 is incorporated by reference to the 2020 Proxy Statement.

### ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required under this Item 12 is incorporated by reference to the 2020 Proxy Statement.

### ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required under this Item 13 is incorporated by reference to the 2020 Proxy Statement.

### ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required under this Item 14 is incorporated by reference to the 2020 Proxy Statement.

## PART IV

## ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULE

We have filed the following documents as part of this Annual Report on Form 10-K:

1. Financial Statements: See "Index to Consolidated Financial Statements" in Part II, Item 8 of this Annual Report on Form 10-K.

2. Financial Statement Schedule:
   a. Allowance for doubtful accounts: see Note 2, "Balance Sheet Details" in Part II, Item 8 of this Annual Report on Form 10-K.
   b. Deferred tax assets valuation allowance: see Note 13, "Income Taxes" in Part II, Item 8 of this Annual Report on Form 10-K.

3. Exhibits: See "Index to Exhibits" below.

## INDEX TO EXHIBITS

| Exhibit No. | Description |
|---|---|
| 2.01 [a] | Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A. |
| 2.02 | Amendment No. 1, dated December 28, 2017, to the Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A. |
| 2.03 | Amendment No. 2, dated April 16, 2019, to the Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A. |
| 2.04 [b] | Equity Purchase Agreement, dated October 31, 2019, between registrant and Cosan US, Inc. |
| 3.01 | Restated Certificate of Incorporation |
| 3.02 | Certificate of Amendment, dated May 9, 2013, to Restated Certificate of Incorporation |
| 3.03 | Certificate of Amendment, dated May 12, 2014, to Restated Certificate of Incorporation |
| 3.04 | Certificate of Amendment, dated September 18, 2015, to Restated Certificate of Incorporation |
| 3.05 | Certificate of Amendment, dated May 18, 2016, to Restated Certificate of Incorporation |
| 3.06 | Certificate of Amendment, dated June 5, 2017, to Restated Certificate of Incorporation |
| 3.07 | Form of Certificate of Designation of Preferences, Rights and Limitations of Series A 17.38% Convertible Preferred Stock (found at Exhibit A-1, herein) |
| 3.08 | Form of Certificate of Designation of Preferences, Rights and Limitations of Series B 17.38% Convertible Preferred Stock (found at Exhibit A-2, herein) |
| 3.09 | Certificate of Amendment of the Certificate of Designation of Preferences, Rights and Limitations of Series B 17.38% Convertible Preferred Stock of Amyris, Inc. |
| 3.10 | Form of Certificate of Designation of Preferences, Rights and Limitations of Series C Convertible Preferred Stock (found at Exhibit A-3, herein) |
| 3.11 | Form of Certificate of Designation of Preferences, Rights and Limitations of Series D Convertible Preferred Stock (found at Exhibit E, herein) |
| 3.12 | Restated Bylaws |
| 4.01 | Specimen of Common Stock Certificate |
| 4.02 | Form of certificate representing the Series A 17.38% Convertible Preferred Stock (found at Exhibit D, herein) |
| 4.03 | Form of certificate representing the Series B 17.38% Convertible Preferred Stock (found at Exhibit D, herein) |
| 4.04 | Form of certificate representing the Series C Convertible Preferred Stock (found at Exhibit D, herein) |
| 4.05 | Form of certificate representing the Series D Convertible Preferred Stock |
| 4.06 [a] | Amended and Restated Letter Agreement re: Certain Registration Rights dated May 8, 2014 between registrant and the purchasers listed therein |
| 4.07 | Warrant to Purchase Stock, dated December 23, 2011, issued to ATEL Ventures, Inc. |
| 4.08 [a] | Side Letter, dated June 21, 2010, between registrant and Total Gas & Power USA, SAS |
| 4.09 | Agreement, dated February 23, 2012, among registrant, Maxwell (Mauritius) Pte Ltd, Naxyris SA, Biolding Investment S.A., and Sualk Capital Ltd. |
| 4.10 | Securities Purchase Agreement, dated July 24, 2015, between registrant and the Purchasers listed therein |
| 4.11 [c] | Warrant to Purchase Stock issued July 29, 2015 by registrant to Total Energies Nouvelles Activités USA |
| 4.12 | Exchange Agreement, dated July 26, 2015, between registrant and the investors listed therein |

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| 4.13 | Letter Agreement dated as of July 29, 2015 among registrant and registrant's security holders listed therein |
| 4.14 | Warrant to Purchase Stock issued July 29, 2015 by registrant to Total Energies Nouvelles Activités USA |
| 4.15 | Warrant to Purchase Stock issued July 29, 2015 by registrant to Maxwell (Mauritius) Pte Ltd |
| 4.16 | Warrant to Purchase Stock issued July 29, 2015 by registrant to Maxwell (Mauritius) Pte Ltd |
| 4.17 | Registration Rights Agreement, dated October 20, 2015, between registrant and registrant's security holders listed therein |
| 4.18 | Note and Warrant Purchase Agreement, dated February 12, 2016, between registrant and the purchasers listed therein |
| 4.19 [d] | Warrant to Purchase Stock issued February 12, 2016 by registrant to Foris Ventures, LLC |
| 4.20 | Securities Purchase Agreement, dated April 8, 2016, between registrant and Bill & Melinda Gates Foundation |
| 4.21 | Letter Agreement re Charitable Purposes and Use of Funds, dated April 8, 2016, between registrant and the Bill & Melinda Gates Foundation |
| 4.22 | Warrant to Purchase Stock issued November 16, 2016 by registrant to Nenter & Co., Inc. |
| 4.23 | Purchase Money Promissory Note issued December 19, 2016 by registrant to Nikko Chemicals Co. Ltd. |
| 4.24 | Form of Securities Purchase Agreement, dated May 8, 2017, between registrant and the other parties thereto |
| 4.25 | Amendment No. 1, dated May 30, 2017 to Securities Purchase Agreement, dated May 8, 2017, between registrant and the other parties thereto |
| 4.26 | Form of Common Stock Purchase Warrant (Cash Warrant) issued May 11, 2017 by registrant to the purchasers thereof (found at Exhibit C-1, herein) |
| 4.27 | Form of Common Stock Purchase Warrant (Dilution Warrant) issued May 11, 2017 by registrant to the purchasers thereof (found at Exhibit C-2, herein) |
| 4.28 | Securities Purchase Agreement, dated May 31, 2017, between registrant and the investor named therein |
| 4.29 | Securities Purchase Agreement, dated August 2, 2017, between registrant and DSM International B.V. |
| 4.30 | Securities Purchase Agreement, dated August 2, 2017, between registrant and affiliates of Vivo Capital LLC |
| 4.31 | Form of Common Stock Purchase Warrant (Cash Warrant) issued August 7, 2017 by registrant to DSM International B.V. (found at Exhibit B-1, herein) |
| 4.32 | Form of Common Stock Purchase Warrant (Dilution Warrant) issued August 7, 2017 by registrant to DSM International B.V. (found at Exhibit B-2, herein) |
| 4.33 | Form of Stockholder Agreement, dated August 3, 2017, between registrant and affiliates of Vivo Capital LLC (found at Exhibit C, herein) |
| 4.34 | Common Stock Purchase Warrant (Cash Warrant), issued May 31, 2017, by registrant to the investor named therein |
| 4.35 | Common Stock Purchase Warrant (Dilution Warrant), issued May 31, 2017, by registrant to the investor named therein |
| 4.36 [a] | Stockholder Agreement, dated May 11, 2017, between registrant and DSM International B.V. |
| 4.37 [a] | Amended and Restated Stockholder Agreement, dated August 7, 2017, between registrant and DSM International B.V. |
| 4.38 | Promissory Note issued October 20, 2017 by registrant to Ginkgo Bioworks, Inc. |
| 4.39 | Note issued December 28, 2017 by registrant to DSM Finance BV |
| 4.40 | Warrant Exercise Agreement, dated August 17, 2018, between registrant and Foris Ventures, LLC |
| 4.41 | Warrant Exercise Agreement, dated August 17, 2018, between registrant and Vivo Capital Fund VIII, L.P. |
| 4.42 | Warrant Exercise Agreement, dated August 17, 2018, between registrant and Vivo Capital Surplus Fund VIII, L.P. |
| 4.43 | Common Stock Purchase Warrant issued August 17, 2018 by registrant to Foris Ventures, LLC |

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| 4.44 | Common Stock Purchase Warrant issued August 17, 2018 by registrant to Vivo Capital Fund VIII, L.P. |
| 4.45 | Common Stock Purchase Warrant issued August 17, 2018 by registrant to Vivo Capital Surplus Fund VIII, L.P. |
| 4.46 | Common Stock Purchase Warrant issued August 20, 2018 by registrant to Vivo Capital Fund VIII, L.P. |
| 4.47 | Common Stock Purchase Warrant issued August 20, 2018 by registrant to Vivo Capital Surplus Fund VIII, L.P. |
| 4.48 | Securities Purchase Agreement, dated November 19, 2018, between registrant and DSM International B.V. |
| 4.49 | Securities Purchase Agreement, dated December 6, 2018, among registrant and the investors named therein |
| 4.50 | Form of Registration Rights Agreement, dated December 10, 2018, among registrant and the investors party thereto (found at Exhibit B, herein) |
| 4.51 | Promissory Note issued April 8, 2019 by registrant to Foris Ventures, LLC |
| 4.52 | Securities Purchase Agreement, dated April 15, 2019, between registrant and Foris Ventures, LLC |
| 4.53 | Common Stock Purchase Warrant issued April 16, 2019 by registrant to Foris Ventures, LLC |
| 4.54 | Warrant Amendment Agreement, dated April 26, 2019, between registrant and Foris Ventures, LLC |
| 4.55 | Form of Security Purchase Agreement, dated April 24, April 26 or April 29, 2019, between registrant and certain accredited investors |
| 4.56 | Form of Common Stock Purchase Warrant issued April 26, April 29 or May 3, 2019 by registrant to certain accredited investors (found at Exhibit A, herein) |
| 4.57 | Common Stock Purchase Warrant issued May 10, 2019 by registrant to LMAP KAPPA Limited |
| 4.58 | Common Stock Purchase Warrant issued May 10, 2019 by registrant to Silverback Opportunistic Credit Master Fund Limited |
| 4.59 | Warrant to Purchase Common Stock issued May 14, 2019 by registrant to Foris Ventures, LLC |
| 4.60 | Form of Senior Convertible Note issued May 15, 2019 by registrant to CVI Investments, Inc. (found at Exhibit A, herein) |
| 4.61 | Form of Common Stock Purchase Warrant issued May 15, 2019 by registrant to CVI Investments, Inc. (found at Exhibit B, herein) |
| 4.62 | Senior Convertible Note issued May 15, 2019 by registrant to Total Raffinage Chimie |
| 4.63 | Senior Convertible Note Maturity Extension, dated June 20, 2019, between registrant and Total Raffinage Chimie |
| 4.64 | Promissory Note issued June 11, 2019 by registrant to Foris Ventures, LLC |
| 4.65 | Form of Senior Convertible Note issued June 24, 2019 by registrant to B. Riley FBR, Inc. (found at Exhibit A, herein) |
| 4.66 | Form of Common Stock Purchase Warrant issued June 24, 2019 by registrant to B. Riley FBR, Inc. (found at Exhibit B, herein) |
| 4.67 | Form of Common Stock Purchase Warrant issued July 8, 2019 by registrant to Wolverine Flagship Fund Trading Limited (found at Exhibit A, herein) |
| 4.68 | Promissory Note issued July 10, 2019 by registrant to Foris Ventures, LLC |
| 4.69 | Warrant Amendment Agreement, dated July 10, 2019, between registrant and Foris Ventures, LLC |
| 4.70 | Senior Convertible Note Maturity Extension, dated July 24, 2019, between registrant and Total Raffinage Chimie |
| 4.71 | Form of Senior Convertible Note issued July 24, 2019 by registrant to CVI Investments, Inc. (found at Exhibit A, herein) |
| 4.72 | Form of Common Stock Purchase Warrant issued July 24, 2019 by registrant to CVI Investments, Inc. (found at Exhibit B, herein) |
| 4.73 | Promissory Note issued July 26, 2019 by registrant to Foris Ventures, LLC |
| 4.74 | Common Stock Purchase Warrant issued August 14, 2019 by registrant to Naxyris S.A. |
| 4.75 | Common Stock Purchase Warrant issued August 14, 2019 by registrant to Foris Ventures, LLC |

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| 4.76 | Promissory Note issued August 28, 2019 by registrant to Foris Ventures, LLC |
| 4.77 | Common Stock Purchase Warrant issued August 28, 2019 by registrant to Foris Ventures, LLC |
| 4.78 | Warrant Amendment Agreement, dated August 28, 2019, between registrant and Foris Ventures, LLC |
| 4.79 | Warrant Amendment Agreement, dated August 28, 2019, between registrant and Foris Ventures, LLC |
| 4.80 | Senior Convertible Note Maturity Extension, dated September 4, 2019, between registrant and Total Raffinage Chimie |
| 4.81 | Form of Promissory Note issued September 10, 2019 by registrant to certain accredited investors (found at Exhibit A, herein) |
| 4.82 | Form of Common Stock Purchase Warrant issued September 10, 2019 by registrant to certain accredited investors |
| 4.83 | Form of Promissory Note issued September 17, 2019, September 19, 2019 and September 23, 2019 by registrant to DSM Finance B.V. |
| 4.84 | Form of Senior Convertible Note issued November 14, 2019 by registrant to certain accredited investors (found at Exhibit A, herein) |
| 4.85 | Common Stock Purchase Warrant November 14, 2019 by registrant to certain accredited investors |
| 4.86 | Form of Common Stock Purchase Agreement issued November 15, 2-10 by registrant to certain accredited investors |
| 4.87 | Promissory Note issued November 27, 2019 by registrant to Foris Ventures, LLC |
| 4.88 | Common Stock Purchase Warrant issued November 27, 2019 by registrant to Foris Ventures, LLC |
| 4.89 | Form of Senior Convertible Note due 2022 issued by Registrant to certain accredited investors |
| 4.90 | Description of Registrant’s Securities Registered Under Section 12 of the Exchange Act |
| 10.01 | Lease, dated August 22, 2007, between registrant and ES East Associates, LLC |
| 10.02 | First Amendment, dated March 10, 2008, to Lease, dated August 22, 2007, between registrant and ES East Associates, LLC |
| 10.03 | Second Amendment, dated April 25, 2008, to Lease, dated August 22, 2007, between registrant and ES East Associates, LLC |
| 10.04 | Third Amendment, dated July 31, 2008, to Lease, dated August 22, 2007, between registrant and ES East Associates, LLC |
| 10.05 | Fourth Amendment, dated November 14, 2009, to Lease, dated August 22, 2007, between registrant and ES East Associates, LLC |
| 10.06 | Fifth Amendment, dated October 15, 2010, to Lease, dated August 22, 2007, between registrant and ES East, LLC |
| 10.07 | Sixth Amendment, dated April 30, 2013, to Lease, dated August 22, 2007, between registrant and ES East, LLC |
| 10.08 | Lease dated April 25, 2008 between registrant and EmeryStation Triangle, LLC |
| 10.09 | Letter, dated April 25, 2008, amending Lease between registrant and EmeryStation Triangle, LLC |
| 10.10 | Second Amendment, dated February 5, 2010, to Lease, dated April 25, 2008, between registrant and EmeryStation Triangle, LLC |
| 10.11 | Third Amendment, dated May 1, 2013, to Lease, dated April 25, 2008, between registrant and EmeryStation Triangle, LLC |
| 10.12 | Pilot Plant Expansion Right Letter dated December 22, 2008 between registrant and EmeryStation Triangle, LLC |
| 10.13 | Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda. |
| 10.14 | First Amendment, dated July 31, 2013,  to Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda. |
| 10.15 | Second Amendment, dated October 31, 2015, to Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda. |
| 10.16 | Third Amendment, dated March 30, 2016, to Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda. |

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| 10.17 | Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, between Lucio Tomasiello and Amyris Brasil S.A. (including Amendment No. 1, dated July 5, 2008, and Amendment No. 2, dated October 30, 2008) |
| 10.18 [ae] | Third Amendment, dated October 1, 2012, to the Private Instrument of Non Residential Real Estate Lease Agreement, dated March 31, 2008, between Lucio Tomasiello and Amyris Brasil Ltda. |
| 10.19 [ae] | Fourth Amendment, dated March 3, 2015, to the Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, among Amyris Brasil Ltda., Lucius Tomasiello and Mauricio Tomasiello |
| 10.20 [e] | Fifth Amendment, dated September 22, 2015, to the Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, among Amyris Brasil Ltda., Lucius Tomasiello and Mauricio Tomasiello |
| 10.21 [e] | Sixth Amendment, dated October 17, 2016, to the Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, among Amyris Brasil Ltda., Lucius Tomasiello and Mauricio Tomasiello |
| 10.22 [e] | Seventh Amendment, dated September 25, 2017, to the Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, among Amyris Brasil Ltda., Lucius Tomasiello and Mauricio Tomasiello |
| 10.23 [e] | Eight Amendment, dated December 9, 2019, to the Private Instrument of Non-Residential Real Estate Lease Agreement, dated March 31, 2008, among Amyris Brasil Ltda., Lucius Tomasiello and Mauricio Tomasiello |
| 10.24 [e] | Lease Agreement, dated May 1, 2010, between São Martinho S.A. and SMA Indústria Química S.A. |
| 10.25 [e] | Amendment No. 2, dated August 31, 2015, to the Lease Agreement, dated May 1, 2010, between São Martinho S.A. and SMA Indústria Química S.A. |
| 10.26 [e] | Amendment No. 3, dated September 1, 2016, to the Lease Agreement, dated May 1, 2010, between São Martinho S.A. and SMA Indústria Química Ltda. (f.k.a. SMA Indústria Química S.A.) |
| 10.27 [e] | Amendment No. 4, dated December 26, 2017, to the Lease Agreement, dated May 1, 2010, between São Martinho S.A. and SMA Indústria Química Ltda. (f.k.a. SMA Indústria Química S.A.) |
| 10.28 [a] | Partnership Agreement, dated October 20, 2017, between registrant and Ginkgo Bioworks, Inc. |
| 10.29 | Credit Agreement, dated December 28, 2017, between registrant and DSM Finance BV |
| 10.30 [a] | Joint Venture Agreement, dated December 6, 2016, among registrant, Nikko Chemicals Co. Ltd., and Nippon Surfactant Industries Co., Ltd. |
| 10.31 [a] | First Amended and Restated LLC Operating Agreement of Aprinnova, LLC (f/k/a Neossance, LLC) dated December 6, 2016 |
| 10.32 | Loan and Security Agreement, dated June 29, 2018, among the registrant, certain subsidiaries of the registrant and GACP Finance Co., LLC |
| 10.33 | Amendment No. 1, dated August 24, 2018, to Loan and Security Agreement, dated June 29, 2018, among registrant, certain of registrant's subsidiaries and GACP Finance Co., LLC, as administrative agent and lender |
| 10.34 | Amendment No. 2, dated November 14, 2018, to Loan and Security Agreement, dated June 29, 2018, among registrant, certain of registrant's subsidiaries and GACP Finance Co., LLC, as administrative agent and lender |
| 10.35 | Amendment No. 3, dated December 14, 2018, to Loan and Security Agreement, dated June 29, 2018, among registrant, certain of registrant's subsidiaries and GACP Finance Co., LLC, as administrative agent and lender |
| 10.36 | Amendment No. 4, dated April 4, 2019, to Loan and Security Agreement, dated June 29, 2018, among registrant, certain of registrant's subsidiaries and GACP Finance Co., LLC, as administrative agent and lender |
| 10.37 | Amendment No 5 to Loan Agreement and Waiver, dated August 14, 2019, among registrant, certain of registrant's subsidiaries and Foris Ventures, LLC |
| 10.38 b | Supply Agreement, dated December 28, 2017, between registrant and DSM Produtos Nutricionais Brasil S.A. |
| 10.39 b | Amendment No. 1, dated November 19, 2018, to Supply Agreement, dated December 28, 2017, between registrant and DSM Nutritional Products AG, as assignee of DSM Produtos Nutricionais Brasil S.A. |

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| 10.40 | Amendment No. 2, dated April 16, 2019, to Supply Agreement, dated December 28, 2017 between registrant and DSM Nutritional Products AG, as assignee of DSM Produtos Nutricionais Brasil S.A. |
| 10.41 | Amendment No. 3, dated October 3, 2019, to Supply Agreement, dated December 28, 2017, between registrant and DSM Nutritional Products AG, as assignee of DSM Produtos Nutricionais Brasil S.A. |
| 10.42 | Assignment Agreement, dated December 31, 2018, between registrant and Hangzhou Xinfu Science & Tech Co. Ltd |
| 10.43 | Lease Agreement, dated May 10, 2019, between Amyris Brotas Fermemtação de Performance Ltda. and Raízen Energia S.A. |
| 10.44 | Credit Agreement, dated April 8, 2019, between registrant and Foris Ventures, LLC |
| 10.45 | Loan Purchase Agreement, dated April 15, 2019, among registrant, GACP Finance Co., LLC and Foris Ventures, LLC |
| 10.46 | Assignment and Assumption Agreement, dated April 16, 2019, among registrant, DSM Nutritional Products AG and DSM Nutritional Products Europe Ltd. |
| 10.47 | Joint Venture Agreement dated May 10, 2019, among registrant, Amyris Brotas Fermentacao de Performance Ltda. and Raizen Energia S.A. |
| 10.48 | Exchange Agreement, dated May 10, 2019, between registrant and Foris Ventures, LLC |
| 10.49 | Exchange Agreement, dated May 10, 2019, among registrant and Silverback Asset Management, LLC |
| 10.50 | Exchange Agreement, dated May 13, 2019, between registrant and Maxwell (Mauritius) Pte Ltd. |
| 10.51 | Exchange Agreement, dated May 15, 2019, between registrant and Total Raffinage Chimie |
| 10.52 | Exchange Agreement, dated May 15, 2019, between registrant and CVI Investments, Inc. |
| 10.53 | Credit Agreement, dated June 11, 2019, between registrant and Foris Ventures, LLC |
| 10.54 | Exchange Agreement, dated June 24, 2019, between registrant and B. Riley FBR, Inc. |
| 10.55 | Consulting Agreement, dated May 28, 2019, between registrant and FLG Partners, LLC |
| 10.56 | Exchange Agreement, dated July 2, 2019, between registrant and Wolverine Flagship Fund Trading Limited |
| 10.57 | Credit Agreement, dated July 10, 2019, between registrant and Foris Ventures, LLC |
| 10.58 | Second Exchange Agreement, dated July 24, 2019, between registrant and CVI Investments, Inc. |
| 10.59 | Loan Agreement, dated July 29, 2019, between registrant and Nikko Chemicals Co., Ltd. |
| 10.60 | Loan and Security Agreement, dated August 14, 2019, among registrant, certain of registrant's subsidiaries and Naxyris S.A. |
| 10.61 | Credit Agreement, dated August 28, 2019, between registrant and Foris Ventures, LLC |
| 10.62 | Form of Credit Agreement, dated September 10, 2019, between registrant and certain accredited investors |
| 10.63 | Standstill Agreement, dated September 10, 2019, among registrant and certain accredited investors |
| 10.64 | Credit Agreement, dated September 17, 2019, between registrant and DSM Finance B.V. |
| 10.65 | Credit and Security Agreement, dated November 14, 2019, by and among the Company, the Subsidiary Guarantors, Schottenfeld Opportunities Fund II, L.P. and Phase Five Partners, LP |
| 10.66 | Loan Agreement, dated December 19, 2019, between registrant and Nikko Chemicals Co., Ltd. |
| 10.67 | Form of Exchange Agreement, dated December 30, 2019, by and between the Company and each of the Investors |
| 10.68 [f] | Offer Letter dated September 27, 2006 between registrant and John Melo |
| 10.69 [f] | Amendment, dated December 18, 2008, to Offer Letter, dated September 27, 2006, between registrant and John Melo |
| 10.70 [f] | Performance Stock Option Award Agreement, dated May 29, 2018, between the registrant and John Melo |
| 10.71 [f] | Amendment #1, dated May 30, 2018, to Executive Severance Plan Participation Agreement, dated December 18, 2013, between the registrant and John Melo |
| 10.72 [f] | Offer Letter, dated November 23, 2016, between registrant and Kathleen Valiasek |
| 10.73 [f] | Amendment, dated March 6, 2017, to Offer Letter, dated November 23, 2016, between registrant and Kathleen Valiasek |
| 10.74 [f] | Offer Letter, dated June 5, 2017, between registrant and Nicole Kelsey |

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| 10.75 [f] | Amendment, dated September 18, 2017, to Offer Letter, dated June 5, 2017, between registrant and Nicole Kelsey |
| 10.76 [f] | Offer Letter, dated October 5, 2017, between registrant and Eduardo Alvarez |
| 10.77 [f] | 2005 Stock Option/Stock Issuance Plan, as amended on July 19, 2011 |
| 10.78 [f] | Form of Notice of Grant of Stock Option under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.79 [f] | Form of Notice of Grant of Stock Option (non-Exempt) under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.80 [f] | Form of Notice of Grant of Stock Option (non-US) under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.81 [f] | Form of Stock Option Agreement under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.82 [f] | Form of Stock Option Agreement (non-US) under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.83 [f] | Form of Stock Purchase Agreement under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.84 [f] | Form of Stock Purchase Agreement (non-US) under registrant's 2005 Stock Option/Stock Issuance Plan |
| 10.85 [f] | 2010 Equity Incentive Plan, as amended on May 22, 2018, and forms of award agreements thereunder |
| 10.86 [f] | 2010 Employee Stock Purchase Plan, as amended on May 22, 2018, and form of subscription agreement thereunder |
| 10.87 [f] | Executive Severance Plan, effective November 6, 2013 |
| 10.88 [f] | Compensation arrangements between registrant and its non-employee directors |
| 10.89 [f] | Compensation arrangements between registrant and its executive officers |
| 10.90 [f] | Form of Indemnity Agreement between registrant and its directors and executive officers |
| 21.01 | List of subsidiaries |
| 23.01 | Consent of Macias Gini & O'Connell LLP, independent registered public accounting firm |
| 24.01 | Power of Attorney (included on signature page to this Form 10-K) |
| 31.01 | Certification of Chief Executive Officer pursuant to Securities Exchange Act Rules 13a-14(c) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 |
| 31.02 | Certification of Chief Financial Officer pursuant to Securities Exchange Act Rules 13a-14(c) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 |
| 32.01 [g] | Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 |
| 32.02 [g] | Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 |
| 101.INS | XBRL Instance Document |
| 101.SCH | XBRL Taxonomy Extension Schema Document |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document |

a Portions of this exhibit, which have been granted confidential treatment by the Securities and Exchange Commission, have been omitted.

b Portions of this exhibit have been omitted pursuant to Item 601(b)(10)(iv) of Regulation S-K promulgated under the Exchange Act.

c Registrant issued substantially identical warrants to the purchasers under that certain Securities Purchase Agreement entered into on July 24, 2015. Registrant has filed the warrant issued to Total Energies Nouvelles Activites USA and has included with such exhibit a schedule (Schedule A to Exhibit 4.11) identifying each of the warrants and setting forth the material details in which the other warrants differ from the filed warrant (i.e., the names of the purchasers, the certificate numbers and the respective numbers of

d Substantially identical warrants were issued to three separate investors. Registrant has filed the warrant issued to Foris Ventures, LLC, which is substantially identical in all material respects to all of such warrants except as to the parties thereto, the issue date and the number of underlying shares.

e Translation to English from Portuguese in accordance with Rule 12b-12(d) of the regulations promulgated by the Securities and Exchange Commission under the Exchange Act.

f Indicates management contract or compensatory plan or arrangement.

g This certification shall not be deemed “filed” for purposes of Section 18 of the Exchange Act or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act or the Exchange Act.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

AMYRIS, INC.

By: /s/ John G. Melo

John G. Melo
President and Chief Executive Officer
March 13, 2020

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints John G. Melo and Jonathan Wolter, and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the U.S. Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the registrant, in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| /s/ John G. Melo<br>John G. Melo | Director, President and Chief Executive Officer<br>(Principal Executive Officer) | March 13, 2020 |
| /s/ Jonathan Wolter<br>Jonathan Wolter | Interim Chief Financial Officer<br>(Principal Financial Officer) | March 13, 2020 |
| /s/ Anthony Hughes<br>Anthony Hughes | Chief Accounting Officer<br>(Principal Accounting Officer) | March 13, 2020 |
| /s/ John Doerr<br>John Doerr | Director | March 13, 2020 |
| /s/ Geoffrey Duyk<br>Geoffrey Duyk | Director | March 13, 2020 |
| /s/ Philip Eykerman<br>Philip Eykerman | Director | March 13, 2020 |
| /s/ Christoph Goppelsroeder<br>Christoph Goppelsroeder | Director | March 13, 2020 |
| /s/ Frank Kung<br>Frank Kung | Director | March 13, 2020 |
| /s/ James McCann<br>James McCann | Director | March 13, 2020 |
| /s/ Steve Mills<br>Steve Mills | Director | March 13, 2020 |
| /s/ Carole Piwnica<br>Carole Piwnica | Director | March 13, 2020 |
| /s/ Lisa Qi<br>Lisa Qi | Director | March 13, 2020 |
| /s/ R. Neil Williams<br>R. Neil Williams | Director | March 13, 2020 |
| /s/ Patrick Yang<br>Patrick Yang | Director | March 13, 2020 |

**EXHIBIT 31.01**

**CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, John G. Melo, certify that:

1. I have reviewed this annual report on Form 10-K of Amyris, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ John G. Melo

John G. Melo
*President and Chief Executive Officer*
March 13, 2020

**EXHIBIT 31.02**

**CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Jonathan Wolter, certify that:

1. I have reviewed this annual report on Form 10-K of Amyris, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Jonathan Wolter

Jonathan Wolter
*Interim Chief Financial Officer*
March 13, 2020

**EXHIBIT 32.01**

**CERTIFICATION PURSUANT TO**
**18 U.S.C. SECTION 1350**
**AS ADOPTED PURSUANT TO SECTION 906**
**OF THE SARBANES-OXLEY ACT OF 2002**

I, John G. Melo, President and Chief Executive Officer of Amyris, Inc. (Company), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- the Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (Report) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company for the periods presented therein.

/s/ John G. Melo

John G. Melo
*President and Chief Executive Officer*
March 13, 2020

**EXHIBIT 32.02**

**CERTIFICATION PURSUANT TO**
**18 U.S.C. SECTION 1350**
**AS ADOPTED PURSUANT TO SECTION 906**
**OF THE SARBANES-OXLEY ACT OF 2002**

I, Jonathan Wolter, Interim Chief Financial Officer of Amyris, Inc. (Company), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- the Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (Report) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company for the periods presented therein.

/s/ Jonathan Wolter

Jonathan Wolter
*Interim Chief Financial Officer*
March 13, 2020

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**EXECUTIVE OFFICERS**

John Melo
President and Chief Executive Officer

Han Kieftenbeld
Chief Financial Officer

Eduardo Alvarez
Chief Operating Officer

Nicole Kelsey
General Counsel and Secretary

**BOARD OF DIRECTORS**

John Doerr
Director and Chair of the Nominating and Governance Committee

Geoffrey Duyk, M.D., Ph.D.
Director and Interim Chair of the Board

Philip Eykerman
Director

Christoph Goppelsroeder
Director

Frank Kung, Ph.D.
Director

James McCann
Director

John Melo
Director, President and Chief Executive Officer

Steven Mills
Director, Chair of the Audit Committee and Chair of the Operations and Finance Committee

Carole Piwnica
Director and Chair of the Leadership Development and Compensation Committee

Lisa Qi
Director

Patrick Yang, Ph.D.
Director

**STOCKHOLDER INFORMATION**
**Corporate Headquarters**

*USA*
Amyris, Inc.
5885 Hollis Street, Ste. 100
Emeryville, CA 94608
Main Phone: +1 (510) 450-0761
Main Fax: +1 (510) 225-2645

*Brazil*
Amyris Biotecnologia do Brasil Ltda.
Campinas, Brasil
Rua John Dalton, 301 – Bloco B – Edificio 3 –
Condomínio Techno Plaza
Campinas, SP 13069-330
Main Telephone: +55 (19) 3783 9450

**Transfer Agent**

EQ Shareowner Services
1110 Centre Pointe Curve, Suite 101
Mendota Heights, MN 55120
+1 (855) 217-6361

**Independent Auditor**

Macias Gini & O'Connell LLP
San Francisco, California

**Stock Listing**

NASDAQ: AMRS

**Annual Meeting**

The 2020 Annual Meeting of Stockholders is scheduled to take place at 2:00 p.m. Pacific Time on Tuesday, May 29, 2020 at our headquarters in Emeryville, California.

**Investor Relations**

We welcome inquiries from our stockholders and other interested investors. To obtain a paper copy of our Annual Report on Form 10-K for fiscal year 2019, including the financial statements and the financial statement schedules contained in the Form 10-K, at no charge, please submit your request in writing by sending an e-mail request to Amyris Investor Relations at investor@amyris.com, calling (510) 740-7481, or writing to Amyris Investor Relations at 5885 Hollis Street, Suite 100, Emeryville, California 94608. We also make our Annual Report on Form 10-K, as well as our other SEC filings, available free of charge through the investor relations section of our website located at http://investors.amyris.com as soon as reasonably practicable after they are filed with or furnished to the Securities and Exchange Commission.

**Certifications**

The certifications by our Chief Executive Officer and Chief Financial Officer pursuant to Sections 302 and 906 of the Sarbanes-Oxley Act of 2002 are filed as exhibits to our Annual Report on Form 10-K for fiscal year 2019. A copy of our Annual Report on Form 10-K for fiscal year 2019, including such certifications, is enclosed with this report.