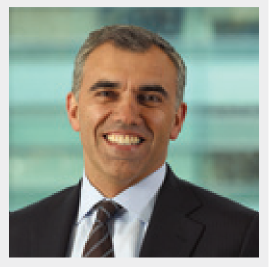
amyris

2021 ANNUAL REPORT

Notice of 2022 Annual Meeting of Stockholders &
Proxy Statement

Amyris, Inc.
5885 Hollis Street, Suite 100
Emeryville, California 94608



"We are establishing our Lab-to-Market technology platform as the cornerstone of ethical and sustainable commerce and enabling the ESG agendas of our customers and partners."

John G. Melo

President and
Chief Executive Officer

April 11, 2022

To Our Valued Shareholders:

On behalf of Amyris and our Board of Directors, I hope you and your families are staying healthy and safe as we navigate these uncertain and turbulent times.

2021 was a transformative year for Amyris. We focused on doing three things well. First, we demonstrated the unparalleled potential of our Lab-to-Market™ technology platform in delivering clean chemistry. This technology platform drives the portfolio connection between our proprietary science and formulation expertise, our manufacturing capability at industrial scale, and our ability to commercialize sustainable products that improve people's lives.

Second, we added five new consumer brands to our portfolio to address the market's growing demand for clean, sustainable health, beauty and wellness. Through our brands, we have been able to drive rapid and large-scale adoption of our powerful technology platform and sustainable ingredients.

Finally, we simplified our business by providing technology access through collaborations and licensing of our molecules, as we helped our partners – who are leaders in their respective sectors – to improve their own ESG goals by transforming supply chains, improving costs, enhancing their product and business performance, reducing environmental impact, and meeting the needs of consumers for sustainable products. Of note, in 2021, we entered into strategic joint ventures and partnerships to deploy our technology in the Health & Wellness sector, further developing our zero-calorie sweetener, offering sustainable proteins for the beef industry, and advancing an ssRNA vaccine platform.

2021 ACCOMPLISHMENTS

In 2021, we made important progress toward our mission of accelerating the world's transition to sustainable consumption. We are committed to making the world healthier for all.

We Expanded our Consumer Brand Portfolio

We began 2021 with three award-winning consumer brands, Biossance® clean beauty skincare, Pipette® clean baby skincare, and Purecane™ zero-calorie sweetener. During the second half of 2021, we launched five additional consumer brands in the Clean Beauty & Personal Care market, including Rose Inc. ™ clean color cosmetics, JVN™ clean haircare, Terasana® clean skincare, Costa Brazil® luxury skincare, and OLIKA™ clean wellness. In addition to entering new product categories (such as hair and color cosmetics), we sought to engage new consumer demographics and increase brand awareness through our omnichannel strategy of social media, artificial intelligence-enabled technology, and traditional brick and mortar retail experiences. We are excited about the new brands in the pipeline for 2022 to address the critical health needs of women in menopause and deliver affordable clean beauty products for Gen Zers.

We De-Risked our Supply Chain

As the world continues to contend with supply chain headwinds, we made critical investments in our manufacturing capabilities. In 2021, we made substantial progress in completing the construction of our fermentation plant in Barra Bonita, Brazil, which is on track to begin commercialization in this second quarter. We also commenced the build-out of a large manufacturing facility for the production and fulfillment of our clean beauty products in Reno, Nevada. We expect these investments to improve our gross margin, reduce operating expenses, accelerate the introduction of new products, and support the continued demand for our manufactured ingredients and products in 2022 and into the future.

We Delivered Record Financial Performance

In 2021, we delivered record total revenue of $342 million, reflecting 97% growth over the prior year. We also achieved a record $92 million in consumer revenue, representing 78% growth over the prior year. Our consumer growth was supported by record sales of our legacy consumer brands, including Biossance and Pipette, and exceptional early traction with respect to our newly launched brands, Rose, Inc. and JVN.

In the fourth quarter of 2021, we successfully closed a $690 million convertible note offering, enabling us to retire restrictive and costly legacy debt and recapitalize our balance sheet, to end the year with $483 million in cash. We are well capitalized to grow our consumer business and make important capital expenditures in manufacturing and R&D.

STRONG FOUNDATION FOR CONTINUED GROWTH

Our Technology Cornerstone

We are establishing our Lab-to-Market technology platform as the cornerstone of ethical and sustainable commerce and enabling the ESG agendas of our customers and partners. Through our technology platform, we have produced molecules that are made from nature and from sustainable sources. While we have successfully scaled 13 molecules, we have over 25 in development and a full suite of strains and biological pathways already proven to produce over 400 molecules. We are delivering on the promise of synthetic biology and are rapidly cleaning up industries and providing consumers access to their favorite natural ingredients made sustainably through our clean fermentation process.

Our Purpose-Driven Business Strategy

Our technology and product portfolio is focused on industries and commercial opportunities where we can deliver the best performance, most sustainably sourced, and lowest cost production, in accordance with our No Compromise® promise.

For now, we are primarily focused on deploying our technology platform in Beauty, Personal Care and Health & Wellness. Our consumer brands in these sectors are powered by one or more of our platform molecules. Our brands are loved by consumers and are delivering industry-leading growth, as we continually aim for superior product performance at lower cost to the consumer. By marketing our brands directly to consumers, we can educate consumers on ingredient efficacy, performance, safety, and sustainability, with the ultimate goal of moving consumer consumption toward sustainably and ethically-derived ingredients. We are democratizing sustainability by providing consumers cleaner and better performing products for their daily use. The more of Amyris products and ingredients consumers use the healthier our planet becomes.

Our Diverse and Resilient Talent

We have a highly talented workforce that is united by our passion for the environment and clean chemistry. We are purpose-driven in our mission to transition the world to sustainable consumption. And we believe that our rich diversity and culture of equity, inclusion & belonging make us better informed, resilient, and more capable of adapting and thriving amidst ever-changing economic, business, global health, geopolitical, and sociocultural challenges.

****

In closing, I would like to thank our shareholders for your continued support, and our customers for their partnership and belief in our mission of shifting the world to sustainable consumption. I would like to express my appreciation for the employees of Amyris for their tireless efforts and their unwavering commitment to ethical and sustainable solutions.

The tragic consequences of the pandemic, the Taliban's takeover in Afghanistan, and Russia's invasion of Ukraine remind us of the world's inextricable economic, social, and political interconnectedness. They also remind me of another profound and looming threat: climate change.

At Amyris, we responded to the pandemic by accelerating the development of our own second generation COVID-19 vaccine platform. We responded to the crisis in Afghanistan through a company match of employee donations to the UN High Commissioner for Refugees. We also mobilized efforts to support the displaced people of Ukraine through short-term housing and employment opportunities.

But most importantly, at the heart of our business is our commitment to fight climate change through the power of our synthetic biology. The world needs better chemistry, and consumers are demanding sustainability in everything they do and consume. Synthetic biology is a clear path to delivering on the world's critical need for sustainable chemistry, and we believe Amyris is leading this industry and is deeply committed to a positive impact across many of the world's leading industries and sectors. I look forward to continuing our delivery of long-term value to shareholders while having a lasting positive impact on our consumers and planet. We are living some of the biggest fights of our lives, with Amyris we are on the right side of history fighting for 1.5 degrees through the creation of one of the greatest technologies of our century and a significant investment opportunity for our shareholders.

Sincerely,

John G. Melo
President and Chief Executive Officer

[THIS PAGE INTENTIONALLY LEFT BLANK]

Notice of 2022 Annual Meeting of Stockholders

Annual Meeting of Stockholders

Date and Time:
Friday, May 27, 2022,
2:00 p.m. Pacific Time

Location:
Virtual Meeting:
www.proxydocs.com/AMRS

Record Date:
Wednesday, March 30, 2022

Mail Date:
Notice of Internet Availability of Proxy Materials ("Notice") will be mailed on or about April 13, 2022

Voting Matters

At or before the 2022 Annual Meeting of Stockholders ("Annual Meeting"), we ask that you vote on the following items:

Item 1 Election of three Class III Directors to serve for a three-year term

Item 2 Ratification of the appointment of Independent Registered Public Accounting Firm

Item 3 Approval of amendment to Certificate of Incorporation to increase authorized shares

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting: our Proxy Statement and 2021 Annual Report are available free of charge on our website at **https://investors.amyris.com/annual-reports**

How to Vote:

Internet

Visit www.proxydocs.com/AMRS and use your unique control number found in your Notice, proxy card or voting instruction form to access the voting site

Mail

Complete and sign the proxy card or voting instruction form and return it by mail.

Telephone

Follow the telephone instructions provided in your Notice, proxy card or voting instruction form.

During the Meeting

This year's Annual Meeting of Stockholders will be virtual. For details on how to pre-register and attend the virtual meeting or on how to vote your shares during the virtual meeting, see p. 72, "*Questions and Answers about the Annual Meeting and Voting.*"

We are using the Internet as our primary means of furnishing proxy materials to our stockholders, instead of mailing printed copies. By doing so, we save costs and reduce our impact on the environment. We will instead mail or otherwise make available to each of our stockholders a Notice of Internet Availability of Proxy Materials, which contains instructions on how to access our proxy materials, and vote, online. The Notice also provides information on how stockholders can obtain paper copies of our proxy materials.

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 Annual Meeting. These proxy materials were first sent on or about April 13, 2022 to stockholders entitled to vote at the Annual Meeting.

Your vote is important, regardless of the number of shares of our stock that you own. Whether or not you plan to attend our virtual Annual Meeting, it is important that your shares are represented and voted. We encourage you to submit your proxy as soon as possible by internet, by telephone, or by signing and returning all proxy cards or instruction forms provided to you.

By Order of the Board of Directors

Nicole Kelsey
Chief Legal Officer and Secretary
April 11, 2022

Amyris, Inc.
5885 Hollis Street, Suite 100
Emeryville, California 94608

[THIS PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

Index of Frequently Requested Information

[THIS PAGE INTENTIONALLY LEFT BLANK]

Sustainability at Amyris

Amyris is deeply committed to sustainability and to protecting the abundance and beauty of nature. Our mission is to accelerate the world's transition to sustainable consumption. At the heart of what we do is chemistry. By modifying the genetics of yeast strains and fermenting them in sugarcane syrup, we have pioneered the ability to convert basic plant sugars to hydrocarbon molecules. We use what is renewable to recreate what is finite.

Natural biology inspires our technology to create sustainable ingredients. Our technology platform enables us to produce rare, natural molecules that are integral to medications, health, personal care and beauty products that are both safe and effective. Our technology platform provides a scalable way forward in a world where humanity's demand for the earth's bounty far exceeds its supply. We do all of this without compromise – to quality, cost and to sustainability. Make good. No compromise.®

Amyris is a high-growth biotechnology company at the forefront of delivering sustainable solutions that are better for people and the planet. We are focused on the Clean Beauty & Personal Care and Health and Wellness markets through our growing portfolio of consumer brands and as a top supplier of sustainable and natural ingredients to leading global manufacturers and formulators. We have successfully commercialized 13 unique molecules, with dozens more in active development and thousands in the discovery stage in our labs. Our proprietary Lab-to-Market™ technology platform optimizes learning cycles and improves our predictive success, while accelerating our time to market and reducing cost.

Consistent with our mission, we view Environmental, Social, and Governance ("ESG") factors as long-term value drivers for our customers, our Company, our community, our stockholders, and all of our other stakeholders.

ENVIRONMENTAL STEWARDSHIP	SOCIAL RESPONSIBILITY	CORPORATE GOVERNANCE
Sustainable Ingredients Environmental Impact Carbon Footprint	Human Capital Management Health & Safety Community Investment Supplier Sustainability	Governance Practices Ethics & Integrity ESG Strategy & Oversight

ENVIRONMENTAL STEWARDSHIP

Sustainable Ingredients

Environmental sustainability through science and manufacturing is at the core of Amyris. Our technology platform gives us the ability to make readily available molecules that traditionally come from finite agricultural, animal or petrochemical resources.

Our novel approach to replacing scarce plant and animal molecules with clinically-derived solutions enables us to go from scarcity to abundance, privilege to right, dependence to autonomy.

Environmental Impact and Carbon Footprint

Environmental mission statement: to work with our communities, suppliers and partners to minimize our carbon footprint globally by reducing our requirements for energy and natural resources, manufacturing renewable products, effectively recycling our wastes and byproducts, and responsibly managing our technology.

In support of our mission, our policy is to:

- Ensure that our products and operations comply with existing environmental and labor laws
- Develop products that are sustainably sourced and manufactured
- Conduct our operations in a manner that is committed to recycling, conserving natural resources, and protecting our environment from pollution
- Responsibly manage the use of all of our materials to preserve the health of local ecosystems
- Use metrics to assess our energy dependencies and identify ways to reduce our carbon footprint and greenhouse gas emissions
- Promote environmental and social responsibility among our employees through company initiatives, recognition and events
- Endeavor to work only with suppliers and distributors who share our commitment to sustainable management practices

Awards: Our commitment to environmental stewardship continues to earn us external recognition. Below is a selection of the awards and recognition we received over the past year:

World Changing Ideas, 2021, Honorable Mention for Shark -Saving Vaccine Adjuvant	Reuters Responsible Business Awards, 2021, Nominated	#23 in Real Leaders 2021 Top Impact Companies	WWD 2021 Beauty Inc. Awards, Wellness Award

SOCIAL RESPONSIBILITY

Human Capital Management

Our Board believes that human capital management, including Diversity, Equity, and Inclusion ("DEI") initiatives, are important to our success. In February 2019, Amyris' Legal Team created its own DEI Initiative to raise awareness around DEI matters within the Company and to reinforce the importance of diverse staffing on its legal matters by the Company's outside counsel.

In August 2020, we appointed Julie Spencer Washington to our Board, a Black executive with transformational marketing leadership experience. She was subsequently appointed to the Leadership, Development, Inclusion and Compensation Committee of the Board ("LDICC").

The Board expanded the remit of the LDICC in 2020 to include oversight of DEI matters, renaming the Committee to add the word "Inclusion." We conduct an employee engagement survey on an annual basis and the results of these surveys are discussed with the LDICC. In January 2022, we appointed Ana Dutra to our Board, a Latina executive with deep experience in M&A, integration, human capital, and ESG matters.

Amyris is committed to enhancing the diversity of our workforce and promoting a culture of acceptance and equality throughout the organization.

- **A Diverse Workforce:** Our diversity makes us stronger. We strengthen the value we create as a company when we bring a broad-based workforce together to achieve our goals.

- **Promoting Inclusion:** We promote employee affiliation groups focused on specific diverse needs of our workforce, and provide information about these diverse groups to educate and promote awareness of their diversity in an effort to create an inclusive environment for their development at Amyris.
- **Equal Pay for Equal Work:** We believe in compensating our employees fairly and equitably. We have instituted practices to ensure salary transparency, our management is guided on the principle of pay equity, and our compensation structures by job level and geographical market are available to all employees.

In 2020, we engaged a third-party consultant to conduct a company-wide DEI Climate Survey. Our leadership used the feedback to better understand the strengths and challenges of Amyris and to inform our DEI strategic plan in furtherance of a more welcoming, inclusive, and equitable organization. From there, we launched a learning series for all employees to help increase understanding of issues like unconscious bias, micro-aggressions, social identities and privilege, and effective allyship. We have continued this educational effort throughout 2021, and will continue to emphasize DEI education as a core element of our culture. In March 2022, we appointed our first Vice President, Diversity, Equity, Inclusion & Belonging to drive Amyris' strategy and implementation of an inclusion and diversity-focused roadmap, including cross-functional programs and initiatives at Amyris.

We have over 1,000 employees in the United States, Brazil, Portugal, and the United Kingdom.

- 52% of our U.S. employees are People of Color
- 54% of our employees are Women
- 50% of our Executive Leadership Team is Women

We have the following employee affiliation groups that are organized around diversity attributes:

- W.E.E. (Women Empowering Each Other)
- Out@Amyris (Lesbian, Gay, Bisexual, Transgender, Queers and Others on Gender and Sexuality Spectrum)
- BIPOC (Black, Indigenous, and People of Color)
- Black @ Amyris (Black)

Health and Safety

Safety is an Amyris core value which means that maintaining a safe and healthy work environment for our people, as well as our communities, resources, and planet, is our highest priority. We have a Safety Committee that is responsible for developing, promoting, and maintaining safety policies and procedures. We provide customized environmental health and safety training, carry out regular facility audits, assist employees with risk assessments, promote waste management and reduction practices, provide recommended personal protective equipment, and offer a robust ergonomics program in compliance with CAL-OSHA and the California Department of Public Health.

COVID-19 Response

The global COVID-19 pandemic has caused us to take both a short-term and a long-term view of ESG risks and opportunities.

Since early 2020, we have closely monitored the impact of the global COVID-19 pandemic on all aspects of our business, including its impact on our employees, partners, supply chain, and distribution network. Since the start of the pandemic in early 2020, we developed a comprehensive response strategy including establishing a cross-functional COVID-19 Task Force and implementing business continuity plans to manage the impact of the COVID-19 pandemic on our employees and our business. We have applied recommended public health strategies designed to prevent the spread of COVID-19 and have been focused on the health and welfare of our employees. We have successfully managed to sustain ongoing critical production campaigns and infrastructure while staying in compliance with public health orders.

We have initiated several precautions in accordance with local regulations and guidelines to mitigate the spread of COVID-19 infection across our businesses, which has impacted the way we carry out our business, including additional sanitation and cleaning procedures in our laboratories and other facilities, on-site COVID-19 testing, temperature and symptom confirmations, instituting remote working when possible, and implementing social distancing and staggered worktime requirements for our employees who must work on-site. For employees working remotely, we have rolled out new technologies and collaboration tools as well as provided financial support for ergonomic workstations at home. Our plans to reopen our sites and enable a broad return to work in our offices, laboratories and production facilities will continue to follow local public health plans and guidelines. As the effects of the COVID-19 pandemic and the availability of vaccines continue to rapidly evolve, even if our employees more broadly return to work in our offices, laboratories, and production facilities, we have the flexibility to resume more restrictive on-site and remote work models, if needed, as a result of spikes or surges in COVID-19 infection, hospitalization rates or otherwise.

In addition, the rapid spread of COVID-19 has caused a significant burden on health systems globally and has highlighted the need for companies to innovate and develop new technologies and therapies. To that end, in we have been accelerating our research and development of a sustainable alternative to shark squalene adjuvant currently used in a number of vaccines, including vaccines in development to treat COVID-19.

Community Investment

In support of our communities, Amyris and our employees devote significant time and resources to outreach, such as participating in a variety of donation drives and environmental cleanup efforts. Since the beginning of 2020, our scientists have been volunteering every month to teach STEM lessons to schools in our communities which often includes one-on-one mentoring by our scientists. In 2020, we established the Amyris Annual Scholarship Fund to fund academic scholarships to Black students at historically black colleges and universities ("HBCUs") and local San Francisco Bay Area universities, in order to support future scientists and innovators early in their careers. In 2021, we partnered with the United Negro College Fund and 10,000 Degrees to fund scholarships to approximately 50 college students through the Amyris Annual Scholarship Fund. In January 2021, the Legal Team formalized its activities supporting the Company's local communities with its Legal Gives Back Initiative and, since then, has engaged in multiple initiatives, including the donation of books to public elementary schools in Emeryville and Oakland, California, in-kind donations to the Oakland Animal Shelter and volunteer participation in trash cleanup activities in celebration of Earth Day and participation in a food justice program.

Supplier Sustainability

We require our suppliers to conduct their businesses in alignment with our Supplier Code of Conduct, which contains specific standards on labor and human rights, business ethics, environmental sustainability, social responsibility, privacy, security, and intellectual property. The Supplier Code of Conduct is posted on our website and is part of our overall legal and compliance program. Failure by any of our suppliers to comply with our Supplier Code of Conduct may result in termination of our business relationship with such supplier. We have global channels for the reporting of any suspected unethical, illegal or improper business practices by our employees and suppliers.

CORPORATE GOVERNANCE

We are committed to a strong governance program, and our practices are designed to maintain high standards of oversight, compliance, integrity, and ethics. Each year, we review our corporate governance policies, compliance policies and procedures, and compensation practices and policies to ensure they are consistent with evolving market practices and trends and the promotion of long-term stockholder value.

Governance Practices

Our 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 maintain high standards of Board and Committee governance, and to clarify the responsibilities of management in supporting the Board's activities. The Corporate Governance Principles set forth a framework for Amyris' governance practices, including composition of the Board and its Committees, functions and responsibilities of the Board and its Committees, director nominee selection, Board membership criteria, director compensation, Board education, meeting responsibilities, access to information and employees, executive sessions of independent directors, and responsibilities of management vis-à-vis the Board and its Committees.

Corporate Governance Strengths

Strong independent oversight	Board qualifications and accountability	Board oversight of strategy and risk management
▪ 9 out of 11 directors are independent	▪ Diverse Board in terms of tenure, gender, race, ethnicity, experience and skills	▪ Risk oversight by the full Board and Committees
▪ Independent Board Chair and independent Board Committees	▪ Annual Board and Committee self-evaluation	▪ Independent compensation program risk analysis and reporting directly to the LDICC
▪ Executive sessions of independent directors	▪ No poison pill anti-takeover defenses	▪ Audit Committee oversight of cybersecurity

Ethics & Integrity

Integrity is another one of our core values. We strive to be honest, ethical, and deal fairly with each other and all third parties, holding ourselves accountable and delivering on our commitments. We maintain a robust compliance program that includes a Code of Business Conduct and Ethics that applies to all directors, officers, employees, consultants, agents and contractors of Amyris as required by The Nasdaq Stock Market ("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 https://investors.amyris.com/corporate-governance.

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 any of 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 https://investors.amyris.com/corporate-governance.

ESG Strategy & Oversight

Our Chief Engagement & Sustainability Officer ("CESO") is responsible for framing the ESG issues and goals in strategic terms, leading systemic ESG improvements, and communicating the strategic direction for the Company's ESG objectives. As part of our ongoing identification and assessment of ESG risks and opportunities, Amyris completed a materiality and gap analysis utilizing frameworks including those of the Sustainability Accounting Standards Board and Global Reporting Initiative. In addition, our CESO has engaged a cross-functional team consisting of members of finance, supply chain, quality, research and development, human resources, and legal as the ESG Council. The Company published its first ESG Report in 2021. Our Secretary reports on the status of certain ESG activities and related disclosures to the Nominating & Governance Committee ("NGC") of the Board on a quarterly basis.

To actively engage in ESG-related initiatives, our management team has also taken steps toward advancing a formalized ESG program, led by the ESG Council, to identify, coordinate, and advance our ESG priorities and objectives.

Stockholder Engagement

We recognize the benefits of maintaining a robust dialogue with stockholders, which is why we engage in proactive outreach efforts with certain of our largest stockholders. We solicit feedback from our stockholders on a variety of topics, including our business and growth strategy, corporate governance practices, executive compensation matters, and various other ESG matters. This engagement enables us to build meaningful relationships over time with our stockholders and obtain valuable feedback that helps inform our decisions and our strategy throughout the year.

The following graphic describes our typical stockholder outreach and engagement cycle.

Following our 2021 annual meeting, we reached out to stockholders who collectively held approximately 20% of our then-outstanding shares to request meetings, and held meetings with each stockholder who accepted our request for engagement.

Proposal 1

Election of Directors

Nominees for Election to the Board of Directors

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 the annual meeting of stockholders to be held in 2023;
- Class II directors, whose term will expire at the annual meeting of stockholders to be held in 2024; and
- Class III directors, whose term will expire at this 2022 Annual Meeting of stockholders and who have been nominated for re-election.

PROXY

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, and four Class III seats (with one vacancy) constituting the 12 seats on the Board.

At the 2022 Annual Meeting, we are asking our stockholders to vote on the election of three Class III directors, John Doerr, Ryan Panchadsaram, and Lisa Qi to serve until our 2025 annual meeting. The nominees are all current directors of Amyris.

Vote Required and Board Recommendation

Directors are elected by a plurality of the votes present in person or represented by proxy at the meeting and entitled to vote. This means that the three Class III 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 three 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 three 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 that 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 broker, bank or other custodian, nominee, trustee or fiduciary (an "Intermediary"), you must instruct your 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.

Director Biographies

Nominees for Class III Directors for a Term Expiring in 2025

Director since 2006

Age 70

Board Committees
Nominating & Governance Committee (Chair)

Other Current Public Directorships
Alphabet Inc.
Coursera, Inc.
DoorDash, Inc.

John Doerr

Mr. Doerr is Chairman at Kleiner Perkins Caufield & Byers ("KPCB"), a venture capital firm where he has worked since 1980. He currently serves on the board of directors of the following public companies: Alphabet, Coursera, and DoorDash. He previously served as a director of Bloom Energy, Quantumscape and Zynga Inc. Mr. Doerr was previously a director of Amazon from 1996 to 2010. He holds a B.S. in Electrical Engineering and an M.S. in Electrical Engineering and Computer Science from Rice University and an M.B.A. from Harvard Business School.

Key Qualifications

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.

Director since 2021

Age 37

Board Committees
Audit Committee
Leadership, Development, Inclusion & Compensation Committee

Other Current Public Directorships
None

Ryan Panchadsaram

Mr. Panchadsaram is a partner at Foris Ventures and serves as an advisor to the Chairman at Kleiner Perkins since 2016. He invests in bold founders and disruptive technologies that are tackling the climate crisis, fixing our healthcare system, and improving the way we live and work. Prior to Kleiner Perkins, Mr. Panchadsaram worked at the White House and served as the deputy chief technology officer for the United States. In 2015, he served as a delegate to the United Nations to launch the Solutions Summit, a grassroots effort to spotlight the work of exceptional innovators around the world tackling the United Nations' Sustainable Development Goals. Prior to government service, he was a health technology entrepreneur and worked at Microsoft and Salesforce.com. Mr. Panchadsaram holds a Bachelor of Science degree in Industrial Engineering and Operations Research from U.C. Berkeley.

Key Qualifications

Mr. Panchadsaram's experience with the consumer products industry and innovative technology solutions enables him to provide insight and guidance to our management team and Board.

Director since 2019

Age 50

Board Committees
Nominating & Governance Committee

Other Current Public Directorships
None

Lisa Qi

Ms. 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.

Key Qualifications

Ms. Qi brings deep knowledge and significant experience in the areas of e-commerce, product branding, sales and 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.

PROXY

Class I Incumbent Directors with a Term Expiring 2023

Director since 2022

Age 57

Board Committees
None

Other Current Public Directorships
CarParts.com
CME Group, Inc.
First Internet Bancorp

Ana Dutra

Ms. Dutra is the CEO of Mandala Global Advisors Inc., which she founded in 2013, and has over 30 years of experience in P&L management, deal structuring, digital technology, business growth and C-Level business consulting in over 25 countries. Ms. Dutra also currently serves on the board of directors of CarParts.com, CME Group, Inc., and First Internet Bancorp, and certain private companies in the United States and Brazil. Ms. Dutra previously served on the board of directors of Health, Harvest & Recreation Inc. until its acquisition in September 2021. Ms. Dutra holds an MBA from Kellogg School of Management at Northwestern University, a Master's in Economics from Pontificia Universidade do Rio de Janeiro, and a Juris Doctor from Universidade do Estado do Rio de Janeiro.

Key Qualifications

Ms. Dutra's extensive experience assisting boards of directors, CEOs and management teams to identify and execute growth strategies through innovation, acquisitions, and new technologies, enables her to provide valuable contributions to our management team and Board.

Director since 2012

Interim Board Chair since May 2014

Age 62

Board Committees
Audit Committee

Other Current Public Directorships
None

Geoffrey Duyk

Dr. Duyk previously served on the Board from May 2006 to May 2011. Dr. Duyk is a partner of Circularis Partners, a technology focused investment firm. Previously, Dr. Duyk served as a partner and managing director of TPG Alternative & Renewable Technologies (TPG ART), 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 (interim CEO since 2019); and ReGen Holdings Limited, as well as on the Board of Trustees of Case Western Reserve University. 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. He is the Chairman of the board of directors of OncoBay Clinical, a private contract research organization (subsidiary of Moffitt Cancer Center). Dr. Duyk serves as a member of Scientific Advisory Board for Lawrence Berkeley National Laboratory (DOE) and a member of the Advisory Board of Innovatus Capital Partners. 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.

Key Qualifications

Dr. Duyk's experience with the biotechnology and pharmaceutical industries, as well as his expertise in technology investing, enables him to provide insight and guidance to our management team and Board.

James McCann

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 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.

Director since 2019

Age 70

Board Committees
Leadership, Development, Inclusion & Compensation Committee (Chair)
Nominating & Governance Committee

Other Current Public Directorships
1-800-FLOWERS.COM, Inc. (Chairman)
International Game Technology PLC

Key Qualifications

Mr. McCann brings to the Board extensive experience in business leadership, entrepreneurship and innovation, which enables him to assist our CEO in the growth and development of our business.

Steven Mills

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 2014, Mr. Mills has served as a consultant and advisor to clients in the private equity, agribusiness, and financial services fields. Mr. Mills is currently serving as a consultant and advisor to Arianna S.A., a European specialized investment fund. He also serves on the boards of Black Hills Corporation (where he serves as Chair of the board), Farmers Edge, Inc., Illinois College (where he also serves as the Chair of the board), First Illinois Corporation (along with its wholly-owned banking subsidiary, Hickory Point Bank & Trust) and Arianna S.A. Mr. Mills holds a Bachelor of Science degree in Mathematics from Illinois College.

Director since 2018

Age 66

Board Committees
Audit Committee (Chair)
Leadership, Development, Inclusion & Compensation Committee

Other Current Public Directorships
Black Hills Corporation
Farmers Edge, Inc.

Key Qualifications

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 our business, and financial and risk management processes.

Class II Incumbent Directors with a Term Expiring in 2024

Director since 2017

Age 53

Board Committees
None

Other Current Public Directorships
None

Philip Eykerman

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 has been responsible for corporate and business group strategy development, budgeting and planning, improvement programs, and all M&A activities. In 2015, he was also appointed as a member of the DSM Executive Committee. Since September 2020, he is also serving as the President Health Nutrition & Care, thereby managing and overseeing all the group's activities in health, nutrition & care, while maintaining the responsibility for the DSM Mergers & Acquisitions activities. In addition to these roles within DSM, he is also a Supervisory Board member of ChemicalInvest (DSM/CVC JV) and AnQore TopCo B.V. Before joining DSM, Mr. Eykerman worked for 14 years at McKinsey & Company, the last 9 years of which he served as a Partner and leader of McKinsey's Chemicals Practice in the Benelux and France. 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).

Key Qualifications

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.

Director since 2017

Age 73

Board Committees
None

Other Current Public Directorships
TOT Biopharm International Company Ltd. (HKG: 1875)

Frank Kung

Dr. Kung is a founding member of Vivo Capital LLC ("Vivo"), a healthcare focused investment firm founded in 1996 in Palo Alto, California. 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 currently serves on the boards of directors of a number of healthcare and biotechnology companies, including TOT Biopharm International Company Ltd. Dr. Kung holds a Bachelor of Science degree in chemistry from the National Tsing Hua University in Taiwan, and a PhD in molecular biology and an MBA from the University of California, Berkeley.

Key Qualifications

Dr. Kung's experience in the healthcare and biotechnology industries, and with investing in companies, enables him to provide the Board and management with guidance regarding the Company's business strategy and access to the financial markets.

John Melo

Director since 2007

Age 56

Board Committees
None

Other Current Public Directorships
None

Mr. 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 CEO 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 served on 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 boards 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.

Key Qualifications

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, and as our CEO of over 15 years, he brings to our Board a deep and comprehensive knowledge of our business as well as shareholder-focused insight into effectively executing the Company's strategy and business plans to maximize shareholder value.

PROXY

Julie Spencer Washington

Director since 2020

Age 56

Board Committees
Leadership, Development, Inclusion & Compensation Committee

Other Current Public Directorships
None

Ms. Washington has served as Chief Marketing, Communications & Customer Experience Officer of Trinity Health, a Catholic health care delivery system, since January 2020. She previously served as Chief Marketing Officer of Champion Petfoods from 2017 to 2019 and held a number of executive positions at Jamba Juice from 2010 to 2016, including as Chief Marketing & Innovation Officer and prior to that, as Chief Brand Officer and Vice President and as General Manager, Consumer Products. Prior to that, Ms. Washington served in multiple senior leadership positions at Luxottica Retail, Procter & Gamble and Nestlé Purina. She currently serves on the board of directors of Union Institute & University. Ms. Washington holds a MBA from Washington University, a Bachelor of Arts degree in Chemistry and Psychology from Emory University, and an Executive in Education Certificate on Driving Digital and Social Strategy from Harvard University.

Key Qualifications

Ms. Washington's experience in building and developing high-performing teams, fostering DEI efforts, leading business transformation, and driving sustainable corporate growth enables her to provide guidance to the Board and management on consumer needs and behaviors, market dynamics, and digital trends relevant to the Company's business.

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 Naxyris S.A. ("Naxyris"), an investment vehicle owned by Naxos Capital Partners S.C.A. ("Naxos"), 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 Naxyris to serve as a member of the Board. Pursuant to the Letter Agreement, Naxyris designated Carole Piwnica (who was already on the Board) to serve as the Naxyris representative on the Board. Ms. Piwnica stepped down from her position on the Board as of May 29, 2021, and we do not expect Naxyris to designate a new representative to our Board.

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 Christoph 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 1, 2022, DSM beneficially owned 16,701,210 shares of our common stock, representing approximately 5.3% of our outstanding common stock. As a result, Mr. Goppelsroeder stepped down from his position on the Board as of April 1, 2021. Mr. Eykerman, who remains on the Board, is an employee of DSM and receives 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 1, 2022, Vivo beneficially owned 11,642,195 shares of our common stock, representing approximately 3.7% of our outstanding common stock. Notwithstanding Vivo's current stock ownership, Dr. Kung continues to serve on the Board and we expect him to continue to serve as a director until his resignation or until his successor is duly elected by the holders of our 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 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 Nasdaq, a majority of the members of the Board must qualify as "independent," as affirmatively determined by the Board. The Board and the NGC 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.

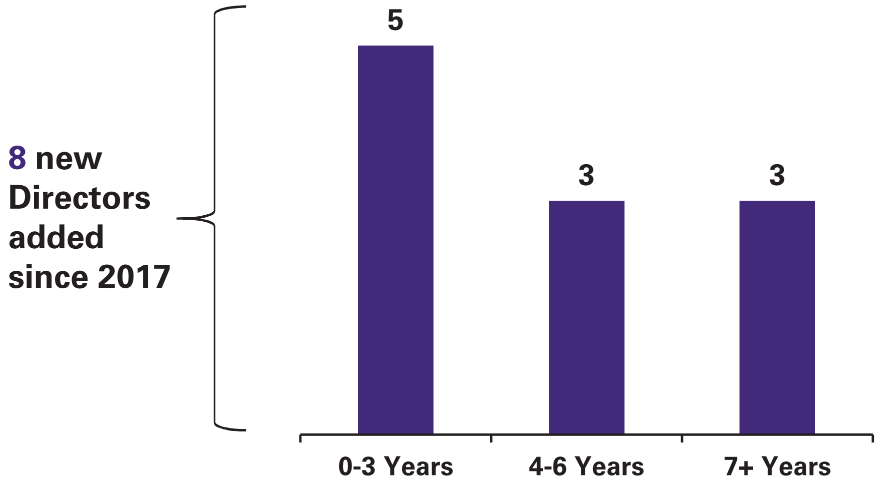
Based on such criteria, the Board determined that (i) Mr. Melo is not independent because he is an Amyris employee and (ii) Mr. Eykerman is not independent because he is an employee of DSM (with which we have commercial and financial relationships, as described below under "Transactions with Related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

For each of the directors other than Messrs. Melo and Eykerman, 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 the 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") and Perrara Ventures, LLC, which beneficially owned 90,615,358 and 3,333,333 shares of our common stock, respectively, representing in the aggregate approximately 29.7% of our outstanding common stock as of March 1, 2022. Mr. Doerr is also a manager of the general partners of entities affiliated with KPCB Holdings, Inc ("KPCB"). As of March 1, 2022, KPCB Holdings, Inc., as nominee for entities affiliated with KPCB, held 278,882 shares of our common stock, which represented less than 1% 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 1, 2022, Vivo beneficially owned 11,642,195 shares of our common stock, representing approximately 3.7% of our outstanding common stock. In addition, Dr. Kung's daughter is a non-executive employee of Amyris.
- Mr. Panchadsaram is a partner at Foris, which beneficially owned 90,615,358 shares of our common stock, representing in the aggregate approximately 28.6% of our outstanding stock as of March 1, 2022. Mr. Panchadsaram also serves as an advisor to the Chairman of KPCB. As of March 1, 2022, KPCB, as nominee for entities affiliated with KPCB, held 278,882 shares of our common stock, which represented less than 1% 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, Ana Dutra, Geoffrey Duyk, Frank Kung, James McCann, Steven Mills, Ryan Panchadsaram, Lisa Qi, and Julie Spencer Washington.

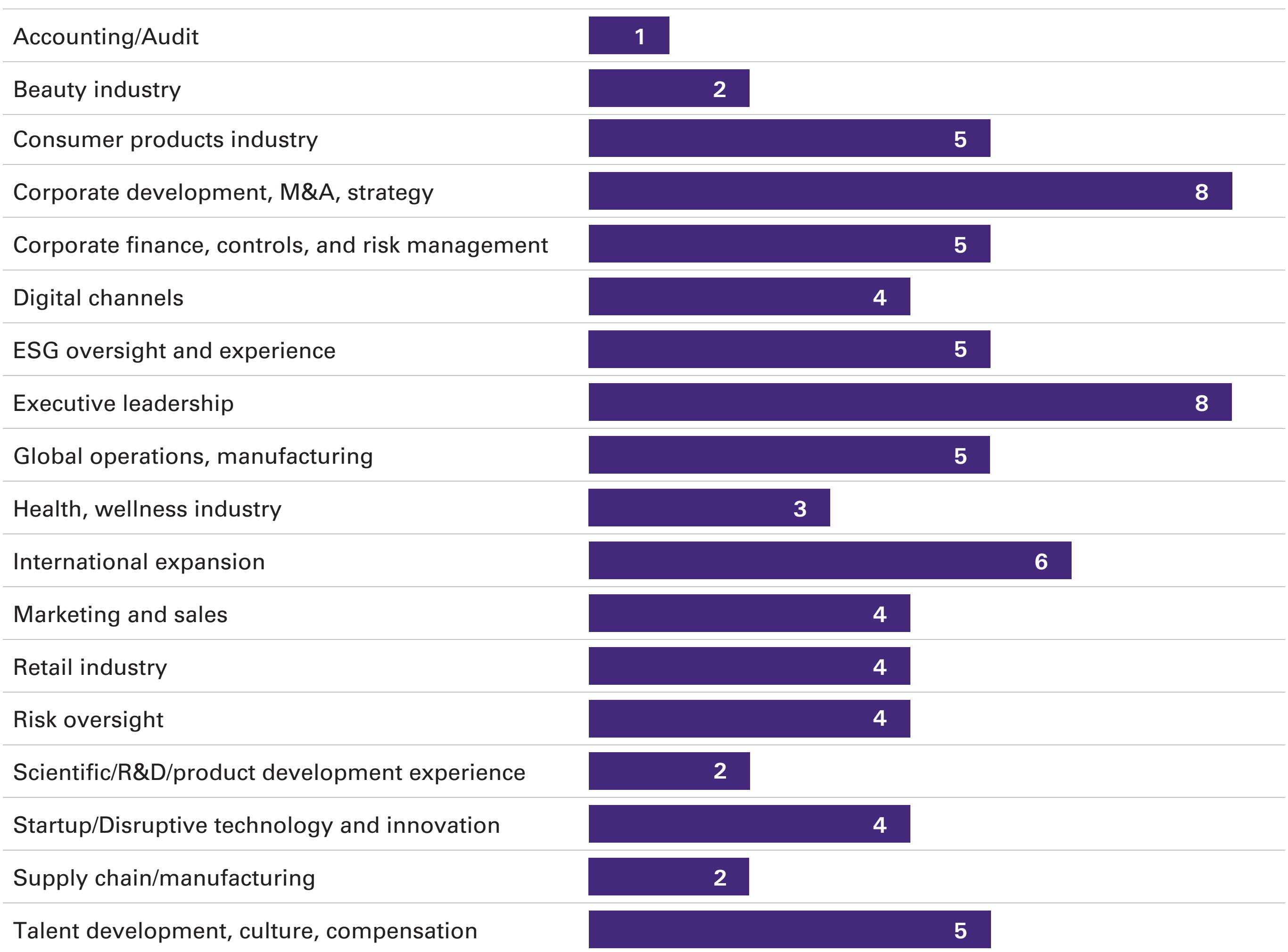
Board Tenure



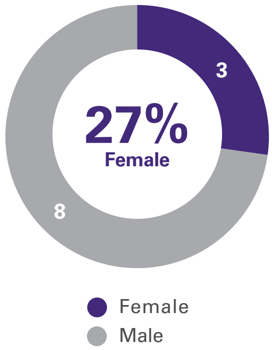
Average Board tenure of approximately 6.4 years

Board Skills and Diversity

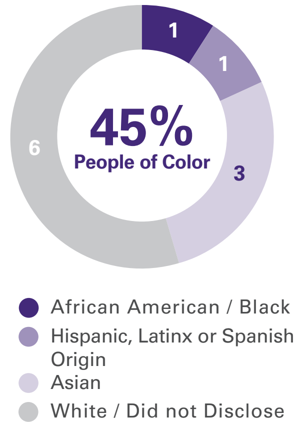
Board Skills, Experience and Attributes



GENDER



ETHNIC DIVERSITY



The following Board Diversity Matrix presents our Board diversity statistics in accordance with Nasdaq Rule 5606, as self-disclosed by our directors, confirming compliance with the minimum objectives of such rule.

Board Diversity Matrix (As of March 31, 2022)				
Total Number of Directors	11			
	Female	**Male**	**Non-Binary**	**Did not Disclose Gender**
Directors	3	8	—	—
Number of Directors who identify in Any of the Categories Below:				
African American or Black	1	—	—	—
Alaskan Native or Native American	—	—	—	—
Asian	1	2	—	—
Hispanic or Latinx	1	—	—	—
Native Hawaiian or Pacific Islander	—	—	—	—
White	—	5	—	—
Two or More Races or Ethnicities	—	—	—	—
LGBTQ+	—	—	—	—
Did not Disclose Demographic Background	—	1	—	—

Board Leadership Structure

The Board is composed of our CEO, John Melo, and ten non-management directors. Geoffrey Duyk, one of our independent directors, currently serves the principal Board leadership role as the interim Board Chair. The Board does not have any policy that the Board Chair must necessarily be separate from the CEO, but the Board appointed Dr. Duyk as interim Board Chair in May 2014 and he continues to serve in this role today. Dr. Duyk's current responsibilities as interim Board Chair include working with the CEO to develop agendas for Board meetings, calling special meetings of the Board or Committees, presiding at executive sessions of independent Board members, and ensuring that an annual self- assessment process is conducted in order to provide feedback to the Board, its Committees and Committee Chairs, and the CEO, as appropriate, and serving as CEO in the absence of another designated CEO. The Board believes that having an independent Board 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 CEO 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.

Board Committees and Meetings

The Board has established an Audit Committee, a LDICC, and an NGC, 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. A copy of each Committee's charter can be found on our website at https://investors.amyris.com/corporate-governance.

During 2021, the Board held four meetings, and its three standing Committees (the Audit Committee, LDICC and NGC) collectively held 24 meetings. 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 2021. The Board's policy is that directors are encouraged to attend our annual meetings of stockholders. No directors attended our 2021 annual meeting of stockholders.

In August 2021, the Board, at the NGC's proposal, approved the dissolution of the Operations and Finance Committee ("OFC"). The OFC's purpose was to review and approve strategic transactions presenting sensitive competition issues. However, upon review and discussion, the Board determined that the OFC was no longer needed and that the Board would continue reviewing and approving the Company's significant M&A, financing, and strategic transactions. Before its dissolution, the OFC held three meetings during 2021.

The following table provides membership for the Board's standing committees as of December 31, 2021:

	Independent Director	Audit Committee	Nominating & Governance Committee	Leadership, Development, Inclusion & Compensation Committee
John Doerr	Member		Chair	
Geoffrey Duyk M.D., Ph.D.	Member	Member		
James McCann	Member		Member	Chair
Steve Mills	Member	Chair		Member
Ryan Panchadsaram	Member	Member		Member
Lisa Qi	Member		Member	
Julie Spencer Washington	Member			Member

Chair Member

Outlined below are brief descriptions of the roles and responsibilities of each standing Committee.

Audit Committee

Current members:
Steve Mills (Chair)
Geoffrey Duyk
Ryan Panchadsaram

Others who served in 2021:
James McCann (resigned from Committee in August 2021)

Number of meetings held in 2021: 8

The Board has determined that each member of the Audit Committee is independent (as defined in the relevant Nasdaq and Securities and Exchange Commission ("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.

Role and Responsibilities

The Audit Committee 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.

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

- oversees our accounting and financial reporting processes and audits of our consolidated financial statements and disclosure thereof;
- oversees our relationship with our independent auditors, including appointing or changing our independent auditors and ensuring their independence;
- monitors our risk assessment and management, and compliance with legal and regulatory requirements, including oversight of cybersecurity risks;
- 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;
- 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; and
- oversees management's plans and objectives for Amyris's capitalization and reviews and approves new offerings of debt, equity or hybrid securities, stock splits, and credit agreements, as well as minority investments by Amyris.

The Audit Committee also 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 together with the Secretary and Compliance Officer, 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 in coordination with the Secretary, oversees the review of any complaints and submissions received through the complaint and anonymous reporting procedures.

Nominating & Governance Committee

Current members:
John Doerr (Chair)
James McCann
Lisa Qi

Number of meetings held in 2021: 4

The Board has determined that each member of the NGC is independent (as defined in the relevant Nasdaq and SEC rules and regulations).

Role and Responsibilities

The NGC ensures 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;
- overseeing and recommending corporate governance guidelines and policies for Amyris (including our Corporate Governance Principles, Code of Business Conduct and Ethics and Insider Trading Policy);
- overseeing the development and achievement of ESG objectives by management;
- overseeing the evaluation of the Board and its committees; 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 NGC also monitors the size, structure and composition of the Board and its Committees and makes any recommendations to the Board regarding improvements to each Committee's operations (including Committee reports to the Board), and structure (including member qualifications, appointment and removal), 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, its Committees and the Directors.

Leadership, Development, Inclusion & Compensation Committee

Current members:
James McCann (Chair)
Steve Mills
Ryan Panchadsaram
Julie Spencer Washington

Number of meetings held in 2021: 8

The Board, after consideration of all factors specifically relevant to determining whether any of Mr. McCann, Mr. Mills, Mr. Panchadsaram, or Ms. Washington 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 LDICC 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 LDICC is independent (as further defined in the relevant Nasdaq and SEC rules and regulations).

Role and Responsibilities

The purpose of the LDICC is to provide guidance and periodic monitoring for all of our compensation, benefits and equity programs. The LDICC, 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 to administer our equity-based and cash-based compensation plans, and may also make recommendations to the Board relating to executive compensation. The LDICC 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 in which our executive officers may participate;
- reviews and approves the terms of cash-based compensation agreements with our executive officers;
- administers 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;
- reviews with our CEO and Board leadership the succession plans for the executive officers; and
- oversees human capital management and DEI strategies and practices.

Board and Committee Oversight of Risk Management

Full Board

The Board as a whole oversees our risk management systems and processes. Each of the standing Committees has been delegated oversight of certain categories of risk and provides the Board with regular reports regarding the Committees' activities.

Assessing and managing risk is the responsibility of our management, which establishes and maintains risk management processes, including prioritization, 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 and discuss strategic plans and objectives, business results, financial condition, compensation programs, strategic transactions, and other matters in the context of various categories of risk.

↑ ↓ ↑ ↓ ↑ ↓

Audit Committee

Responsible for overseeing our financial controls and risk, litigation and regulatory matters, and certain legal compliance matters, as well as enterprise risk prioritization and mitigation (including cybersecurity risk), and management's plans and objectives for our capitalization

Nominating & Governance Committee

Responsible for overseeing risks related to Board and Committee composition and succession, certain legal compliance matters, and corporate governance policies and practices (including ESG goals)

Leadership, Development, Inclusion & Compensation Committee

Responsible for overseeing risks associated with our Board, executive and employee compensation programs and related plans, effective management of executive succession, and management's plans, policies and practices related to human capital (including DEI strategies)

Director Nomination Process

In carrying out its duties to consider and nominate candidates for membership on the Board, the NGC 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 NGC's goal is to nominate directors who will provide a balance of industry, business and technical knowledge, experience and capability. To this end, the NGC 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 NGC 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 NGC strives to reflect current legal developments and modifications to public company standards regarding diversity and inclusion on public company boards, and to nominate directors with a variety of complementary skills and experience. Accordingly, the NGC endeavors for the Board, as a group, to possess the appropriate talent, skills and experience to oversee our business. With respect to four of the most recent additions to our Board membership, the Board considered diversity in its elections of Ms. Dutra, Mr. Panchadsaram, Ms. Qi, and Ms. Washington, and the value of adding additional gender and ethnic diversity to our Board, in addition to their specific professional areas of professional expertise and other qualifications.

The NGC generally uses the following processes for identifying and evaluating nominees for director:

- In the case of incumbent directors, the NGC reviews the directors' overall service to Amyris during each annual assessment process, including performance, effectiveness, participation, and independence.
- In seeking to identify new director candidates, the NGC may use its network of contacts, together with the network of contacts of our CEO and Secretary, to compile a list of potential candidates and may also engage, if deemed appropriate, a professional search firm. The NGC would conduct any appropriate and necessary inquiries into the backgrounds and qualifications of possible candidates after considering the structure and needs of the Board. Our CEO and Secretary regularly review potential candidates with the NGC in order to discuss and consider such candidates' qualifications prior to organizing meetings with select nominees which may lead to recommendations to the Board of such candidates' membership by majority vote.

Stockholder Nominations

The NGC 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 2022 Annual Meeting from any stockholder. Stockholders who wish to recommend individuals for consideration by the NGC to become nominees for election to the Board may do so by delivering a written recommendation to the NGC at the following address: NGC Chair c/o Secretary of Amyris, Inc. at 5885 Hollis Street, Suite 100, Emeryville, California 94608, not later than the close of business on the 75th day, nor earlier than the close of business on the 105th day, prior to the anniversary date of the preceding year's annual meeting of stockholders, which for our 2023 annual meeting of stockholders is not later than March 13, 2023 nor earlier than February 11, 2023. 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.

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 Board Chair, 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 the Secretary will review all communications to determine whether they should be presented to the Board. Following such review, the Secretary will determine which communications will be compiled and submitted to the Board, or a selected group of directors or individual directors, on a periodic basis. 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 the Secretary forward to them immediately all communications received 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 the Chair of the Audit Committee who will direct distribution to the Audit Committee members as required.

Proposal 2

Ratification of Appointment of Independent Registered Public Accounting Firm

General

The Audit Committee appointed Macias Gini & O'Connell LLP ("MGO") as our independent registered public accounting firm for the fiscal year ending December 31, 2022, 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.

During our two most recent fiscal years, which ended December 31, 2021 and 2020, 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 MGO 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 years ended December 31, 2021 and 2020. The following tables set forth the aggregate fees billed to us by MGO for services performed in or for those fiscal years then ended (in thousands):

	Fiscal Year ended December 31,	
Fee Category	**2021**	**2020**
Audit Fees	$1,763.4	$2,084.8
Audit-Related Fees	—	—
Tax Fees	—	—
All Other Fees	124.3	91.8
Total Fees	$1,887.7	$2,176.6

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 years for assurance and related services that are reasonably related to the performance of the audit or review of our consolidated 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, 2021 and 2020.

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, 2021 and 2020.

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. In the fiscal years ended December 31, 2021 and 2020, we incurred fees in this category related to our private placement transaction and the filing of registration statements on Forms S-1, S-3ASR and S-8.

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 2021 or 2020.

All fees paid to, and all services provided by, our independent registered public accounting firm during fiscal years 2021 and 2020 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, 2021. 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.

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, 2021 for filing with the SEC.

Amyris, Inc. Audit Committee of the Board

Steven Mills (Chair)
Geoffrey Duyk
Ryan Panchadsaram

* *The material in this report is not "soliciting material," is not deemed "filed" with the SEC and is not to be incorporated by reference into any filing of Amyris under the Securities Act or the Securities Exchange Act of 1934 (the "Exchange Act"), whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.*

Proposal 3

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 455,000,000 to 555,000,000 and the number of authorized shares of common stock from 450,000,000 to 550,000,000 (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 by means of this Proxy Statement. The form of the proposed Amendment is attached to this Proxy Statement as Appendix A and is incorporated herein by reference.

Article IV of our Certificate of Incorporation currently authorizes us to issue up to 455,000,000 shares of stock, with 450,000,000 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 March 30, 2022, of our 450,000,000 shares of authorized common stock, 317,975,269 shares were issued and outstanding and approximately 140 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 to pursue strategic opportunities from time to time, including potential acquisitions and other capital-intensive opportunities, 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 may 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. We do not currently have enough shares authorized to provide sufficient flexibility to pursue appropriate 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. 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):

- strategic investments;
- acquisitions;
- partnerships, collaborations and other similar transactions;
- financing transactions, such as public or private offerings of common stock or convertible securities;
- debt or equity restructuring or refinancing transactions;
- 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 March 30, 2022, 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 3).

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 3.

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 or the LDICC, as applicable, 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 or the LDICC, as applicable, 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 or the LDICC, as applicable, at times, in amounts, and upon terms that the Board, or the LDICC, 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 and public equity capital raise 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, or from fulfilling certain equity obligations under our equity plans. 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 2020 EIP, 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.

DSM International B.V. 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).

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 A. 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.

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 1, 2022, 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 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 316,635,256 shares of our common stock outstanding on March 1, 2022 (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 (%)
Foris Ventures, LLC(1)	90,615,358	28.6
BlackRock Inc.(2)	21,091,779	6.7
The Vanguard Group(3)	17,315,246	5.5
DSM International B.V.(4)	16,701,210	5.3
Farallon Entities(5)	16,690,427	5.3
Directors and Named Executive Officers:		
John Melo(6)	504,170	*
John Doerr(1)(7)	94,262,350	29.7
Ana Dutra	—	—
Geoffrey Duyk(8)	14,034	*
Philip Eykerman(4)(9)	25,062	*
Frank Kung(10)	11,655,593	3.7
James McCann(11)	15,564	*
Steven Mills(12)	30,732	*
Ryan Panchadsaram(13)	2,690	*
Lisa Qi(14)	9,281	*
Julie Spencer Washington(15)	8,104	*
Eduardo Alvarez(16)	300,415	*
Nicole Kelsey(17)	153,625	*
Han Kieftenbeld(18)	82,366	*
All Directors and Executive Officers as a Group (14 Persons)(19)	107,063,986	33.8

* Less than 1%.

(1) Includes 16,680,334 shares of common stock issuable upon conversion of certain senior convertible notes issued to Foris under the Amended and Restated Loan and Security Agreement, dated June 1, 2022, as amended. 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) According to the Schedule 13G filed with the SEC on February 4, 2022, BlackRock, Inc. ("Blackrock") had shared voting power over 164,814 shares, sole dispositive power over 16,997,520 shares, and shared dispositive power over 317,726 shares. Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of those shares and no one person's interest in such shares is more than five percent of the total outstanding common shares. The address for BlackRock is 55 East 52nd Street, New York, New York 10055.

(3) According to the Schedule 13G filed with the SEC on February 9, 2022, The Vanguard Group ("Vanguard") had sole voting power over 20,794,896 shares and sole dispositive power over 21,091,779 shares. Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of those shares and no one person's interest in such shares is more than five percent of the total outstanding common shares. The address for Vanguard is 100 Vanguard Blvd., Malvern, Pennsylvania 19355.

(4) 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.

(5) According to the Schedule 13G/A filed with the SEC on February 23, 2022, Farallon Partners, L.L.C. ("Farallon General Partner"), on its own behalf and as the general partner of Farallon Capital Partners, L.P., Farallon Capital Institutional Partners, L.P., Farallon Capital Institutional Partners II, L.P., Farallon Capital Institutional Partners III, L.P., Farallon Capital Offshore Investors II, L.P., and Farallon Capital (AM) Investors, L.P., had shared voting and dispositive power over 15,906,515 shares held directly held by such Farallon entities. Farallon Institutional GP V, L.L.C. ("FCIP V General Partner"), as general partner of Four Crossings Institutional Partners V, L.P., had shared voting and dispositive power over 414,510 shares. Farallon F5 (GP), L.L.C. ("F5MI General Partner"), as general partner of Farallon Capital F5 Master I, L.P., had shared voting and dispositive power over 783,912 shares. Farallon Healthcare Partners (GP), L.L.C. ("FHPM General Partner"), as general partner of Farallon Healthcare Partners Master, L.P., had shared voting and dispositive power over 6,898,130 shares.

As managing member or senior managing member of Farallon General Partner and manager or senior manager of FCIP V General Partner, F5MI General Partner and FHPM General Partner, Philip D. Dreyfuss, Michael B. Fisch, Richard B. Fried, Varun N. Gehani, Nicolas Giauque, David T. Kim, Michael G. Linn, Rajiv A. Patel, Thomas G. Roberts, Jr., William Seybold, Andrew J. M. Spokes, John R. Warren and Mark C. Wehrly each had shared voting and dispositive power over the shares held by the Farallon Entities. The address for Farallon Entities is c/o Farallon Capital Management, L.L.C., One Maritime Plaza, Suite 2100, San Francisco, California 94111.

(6) Shares beneficially owned by Mr. Melo include 130,893 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(7) Shares beneficially owned by Mr. Doerr include (i) 90,615,358 shares of common stock beneficially owned by Foris, in which Mr. Doerr indirectly owns all of the membership interests, (ii) 3,333,333 shares of common stock beneficially owned by Perrara Ventures, LLC, in which Mr. Doerr indirectly owns all of the membership interests, (iii) 567 shares of common stock held by The Vallejo Ventures Trust U/T/A 2/12/96, of which Mr. Doerr is a trustee, (iv) 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 and (v) 15,464 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(8) Shares beneficially owned by Dr. Duyk include 2,436 restricted stock units vesting within 60 days of March 1, 2022 and 11,598 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(9) Shares beneficially owned by Mr. Eykerman include 15,131 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022. 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.

(10) Shares beneficially owned by Dr. Kung include (i) 11,642,195 shares of common stock beneficially owned by Vivo Capital LLC (together with its affiliates, "Vivo"), over which Dr. Kung may be deemed to share voting and dispositive power and (ii) 13,398 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022. 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.

(11) Shares beneficially owned by Mr. McCann include 2,860 restricted stock units vesting within 60 days of March 1, 2022 and 7,682 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(12) Shares beneficially owned by Mr. Mills include 3,220 restricted stock units vesting within 60 days of March 1, 2022 and 10,398 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(13) Shares beneficially owned by Mr. Panchadsaram include 2,690 restricted stock units vesting within 60 days of March 1, 2022.

(14) Shares beneficially owned by Ms. Qi include 2,309 restricted stock units vesting within 60 days of March 1, 2022 and 4,216 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(15) Shares beneficially owned by Ms. Washington include 2,372 restricted stock units vesting within 60 days of March 1, 2022 and 3,466 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(16) Shares beneficially owned by Mr. Alvarez include 49,791 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(17) Shares beneficially owned by Ms. Kelsey include 67,853 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(18) Shares beneficially owned by Mr. Kieftenbeld include 34,556 shares of common stock issuable upon exercise of stock options that were exercisable within 60 days of March 1, 2022.

(19) Shares beneficially owned by all of our executive officers and directors as a group include the shares of common stock described in footnotes 6 through 18 above.

Executive Officers

The following table provides the names, ages, and offices of each of our current executive officers as of March 1, 2022:

Name	Age	Position
John Melo	56	Director, President and Chief Executive Officer
Han Kieftenbeld	56	Chief Financial Officer and Chief Administration Officer
Eduardo Alvarez	58	Chief Operating Officer
Nicole Kelsey	55	Chief Legal Officer and Secretary

John Melo

See above under "Proposal 1—Director Biographies"

Han Kieftenbeld

Han Kieftenbeld has served as our Chief Financial Officer since March 2020 and our Chief Administration Officer since July 2020. Mr. Kieftenbeld has over 30 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. Kieftenbeld 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. 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 and was recently appointed our Chief Legal Officer and Secretary. Ms. Kelsey has over 25 years of experience as an executive leader for public companies with international operations. Her areas of expertise range from international M&A to U.S. securities laws and multi-jurisdictional corporate governance, complex securities and commercial litigation, regulatory matters, investor and employee communications, and compliance. Prior to joining Amyris, she served as General Counsel and Secretary of Criteo, a global leader in commerce marketing based in Paris with global operations, 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 and chief compliance officer 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

Compensation Discussion and Analysis

The following discussion describes and analyzes the compensation policies, arrangements, and decisions for our named executive officers (or "NEOs") in 2021 and should be read in conjunction with the compensation tables contained later in this Proxy Statement. We believe our existing compensation policies, arrangements and decisions are consistent with our compensation philosophy and objectives discussed below and align the interests of our NEOs with our short-term and long-term business objectives. During 2021, our NEOs were:

John Melo
President and Chief Executive Officer (our "CEO")

Han Kieftenbeld
Chief Financial Officer and Chief Administration Officer (our "CFO")

Eduardo Alvarez
Chief Operating Officer (our "COO")

Nicole Kelsey
Chief Legal Officer and Secretary (our "CLO")

2021 Business Highlights

We are a high growth, biotechnology company at the forefront of delivering sustainable solutions that are better for people and the planet. To accelerate the world's transition to sustainable consumption, we create, manufacture, and commercialize consumer products and ingredients that reach more than 300 million consumers. Currently, the largest driver of our revenue is derived from marketing and selling Clean Beauty & Personal Care and Health & Wellness consumer products through our direct-to-consumer ecommerce platforms and a growing network of retail partners. We also sell sustainable ingredients to sector leaders that serve Flavor & Fragrance (F&F), Nutrition, Food & Beverage, and Clean Beauty & Personal Care end markets.

Our ingredients and consumer products are powered by our fermentation-based Lab-to-Market™ technology platform. This technology platform drives the portfolio connection between our proprietary science and formulation expertise, our manufacturing capability at industrial scale, and our ability to commercialize sustainable products that make a difference in people's lives. We believe that our technology platform offers advantages to traditional methods of sourcing similar ingredients (such as petrochemistry and extraction from organisms). Our technology platform allows for renewable and ethical sourcing of raw materials, less resource-intensive production, minimal impact on sensitive ecosystems, enhanced purity and safety profile, less vulnerability to climate disruption, and improved supply chain resilience. We bring together biology and engineering to generate more sustainable materials that would otherwise be scarce or endangered in nature. Our technology platform leverages state-of-the-art machine learning, robotics, and artificial intelligence, enabling us to rapidly bring new innovation to market.

We started 2021 with three consumer brands, Biossance® clean beauty skincare, Pipette® clean baby skincare, and Purecane™ zero-calorie sweetener. During the second half of 2021, we launched five additional consumer brands in the Clean Beauty & Personal Care end market, including Terasana® clean skincare, Costa Brazil® luxury skincare, Olika™ clean wellness, Rose Inc.™ clean color cosmetics, and JVN™ clean haircare.

In 2021, we delivered record total revenue of $342 million, representing a 97% increase over the prior year. We also delivered record consumer revenue of $32 million, an increase of 86% over the prior year, driven by strong performance from our three legacy brands, Biossance®, Pipette® and Purecane™, and solid early-stage performance of the newly launched brands, particularly Rose, Inc.™ and JVN™. Our technology access revenue of $33 million increased by 54% compared to the prior year, driven by growth in technology license revenue, including our new joint ventures with ImmunityBio (vaccine) and Minerva Foods (protein).
In November 2021, we sold $690 million convertible senior notes due 2026 which allowed us to simplify our capital structure, pay down restrictive debt arrangements, and provide working capital to support critical investments in R&D, product development, manufacturing and other initiatives as well as our long-term strategic goals.

PROXY

Key Features of our Executive Compensation Program

✓ What We Do	✗ What We Don't Do
✓ **Design executive compensation** to align with performance	✗ **No excessive** change in control or severance payments and benefits
✓ **Balance short-term and long-term incentive compensation**, with the majority of target total direct compensation being "at-risk" and in the form of performance-based compensation	✗ **No "single-trigger"** equity vesting acceleration
✓ **Establish threshold and maximum levels of achievement for payouts** under our annual cash bonus plan	✗ **No repricing** of underwater stock options without stockholder approval
✓ **100% independent directors** on our LDICC	✗ **No excessive perquisites**
✓ **Engage independent compensation consultant** which reports directly to LDICC	✗ **No tax gross ups** on severance change in control payments and benefits
✓ **LDICC meets regularly** in executive session	✗ **No retirement, pension or defined benefit plans** that are not available to employees generally
	✗ **No guaranteed bonuses or base salary increases**

Compensation Philosophy and Objectives

The primary objectives of our employee compensation program (including for our NEOs) in 2021 were to:

- Attract, retain, and motivate highly talented individuals that are key to our success;
- Support business strategy and motivate individuals to achieve outstanding business goals; and
- Support long-term company growth and enhance stockholder value.

Our success depends on, among other things, 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 develop key commercial relationships, create and commercialize products, and establish a reliable supply chain and manufacturing organization.

Our business continues to be in an early stage of product development, with cash management being one key consideration for our strategy and operations. For 2021, we intended to provide a competitive compensation program that would enable us to attract and retain the top executive officers 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 reward short-term 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 sustainable stockholder value by providing long-term incentive compensation in the form of equity awards, including performance-based equity awards with challenging price-based milestones.

Our intent and philosophy in designing compensation packages at the time of hiring new executive officers is based on providing compensation that we believe is sufficient to enable us to attract the necessary talent to grow our business, within prudent limits discussed above. The compensation of our executive officers following their initial hire 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 executive officers.

Elements of Executive Compensation

We compensate our executive officers with fixed compensation (base salary) and variable compensation (cash bonuses and equity awards). We believe this combination of cash and equity compensation, subject to strategic allocation between these 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 executive officers, reward them for performance in the short term and induce them to contribute to the creation of value in the Company 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.

A significant portion of the target total direct compensation for our CEO and our other NEOs is structured as variable or "at-risk" compensation, with payouts and equity award values and vesting dependent upon the Company's performance. This aligns our NEOs' interests with those of our stockholders for near- and long-term performance.

Fixed

Short-Term Cash	**Base Salary**	We believe that we must maintain base salary levels at or above the competitive market level to attract and retain our executive officers and that it is important for our executive officers to perceive that over time they will continue to have the opportunity to earn a base salary that they regard as competitive. The LDICC 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 executive officers at the time of hire. In making such decisions, the LDICC considers several factors, including the overall financial performance of the Company, the individual performance of the executive officer (including, for executive officers other than our CEO, the recommendation of our CEO based on a performance evaluation of the executive officer), the executive officer's potential to contribute to our short-term 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.

Variable

Mid-Term Cash	**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 2021, the LDICC adopted a cash bonus plan for our executive officers, the details of which are described below under "2021 Compensation." The 2021 bonus plan included both Company performance goals and individual performance goals and was structured to motivate our executive officers to achieve our short-term financial, operational, and strategic goals and to reward exceptional Company and individual performance. In particular, our 2021 bonus plan was designed to provide incentives to our executive officers to achieve both 2021 Company financial and operational objectives as well as individual performance objectives on a quarterly and annual basis. In general, target cash bonus opportunities for our executive officers are initially set in their employment offer letters based on similar

		factors to those described above with respect to the determination of base salary. For subsequent years, target cash bonus opportunities for our executive officers may be adjusted by the LDICC based on various factors, including any adjustment to base salary, competitive market practices, and the other factors described above with respect to determination of base salary.
Long-Term Equity	**Time-Vesting Equity Awards**	Our equity awards are designed to be sufficiently competitive to allow us to attract and retain talented and experienced executive officers. In 2021, we granted restricted stock unit ("RSU") awards or a combination of RSUs and stock option awards to our executive officers. Stock options are granted with an exercise price equal to the fair market value of our common stock on the date of grant; accordingly, such stock options will have value to our executive officers only if the market price of our common stock increases after the date of grant. RSU awards represent the right to receive full-value shares of our common stock without payment of any exercise or purchase price. The relative weighting between the stock options and RSU awards granted to our executive officers is based on the LDICC's review of competitive market practices. Typically, we grant stock options with four-year vesting schedules, with 25% of the shares of our common stock subject to the options vesting after one year and monthly thereafter, subject to continued service through each vesting date. Generally, RSU awards have three-year vesting schedules, with one-third of the units subject to the awards vesting annually over three years, subject to continued service through each vesting date. We believe such vesting schedules are generally consistent with the stock option and RSU award granting practices of our peer group companies. In May 2021, the LDICC approved RSU awards with non-standard vesting terms to certain of our NEOs in recognition of significant achievements, the details of which are described below under "2021 Compensation—Equity Awards".
	Performance-Vesting Equity Awards	In 2021, the LDICC approved equity awards to our CEO, CFO and COO consisting of RSUs subject to performance-based vesting conditions as described in more detail below under "2021 Compensation—Equity Awards—2021 Performance Equity Awards."
	Other Equity Awards	In addition to annual equity awards, we grant equity awards to our executive officers in connection with their hire, or, as applicable, their promotion from other roles at the Company or in connection with significant changes in responsibilities, in response to retention needs or to recognize outstanding performance or incentivize specific performance. The size of the initial new hire equity awards is based on the executive officer's position with us and takes into consideration the executive officer's base salary and other compensation as well as an analysis of the equity award grant and compensation practices of our peer group companies. Generally, the initial equity awards are intended to provide the executive officer with an incentive to build value in the Company over an extended period of time, which is consistent with our overall compensation philosophy. While we have incurred operating losses and dedicated substantial amounts of cash to critical capital expenditures and operations, and as a result, set base salaries and target cash bonus opportunities that were, in certain cases, lower than those offered by competing employers, we have sought to attract executive officers to join us by granting equity awards that would have the potential to provide significant value if we are successful.

Stockholder Say-on-Pay Votes

At our 2020 Annual Meeting of Stockholders, our stockholders voted, on an advisory basis, on the compensation of our NEOs (commonly referred to as a "stockholder say-on-pay vote"). In 2020, 98% of the votes cast on the stockholder say-on-pay proposal approved, on a non-binding advisory basis, the compensation of our NEOs as summarized in our 2020 Proxy Statement. The LDICC believes that this affirms our stockholders' support of our approach to executive compensation. Accordingly, our executive compensation approach remained generally consistent in 2021 except for the addition of new performance-based equity awards to our CEO, CFO and COO, as described in more detail below under "2021 Compensation—Equity Awards—2021 Performance Equity Awards." Our stockholders voted to approve the CEO's performance-based equity award at our special meeting of stockholders in July 2021, which we believe affirmed their support for this grant.

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 NEOs at our 2023 Annual Meeting of Stockholders.

Compensation Decision-Making Process

Under the charter of the LDICC, our Board has delegated to the LDICC the authority and responsibility to discharge the responsibilities of our Board relating to the compensation of our executive officers. This includes, among other things, the 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 LDICC, please refer to "Proposal 1—Election of Directors—Board Committees and Meetings" above.

In general, the LDICC is responsible for the design, implementation, and oversight of our executive compensation program. In accordance with its charter, the LDICC determines the annual compensation of our CEO and other executive officers and reports its compensation decisions to our Board. The LDICC also administers our equity compensation plans, including our 2020 Equity Incentive Plan (the "2020 EIP") and 2010 Employee Stock Purchase Plan. Generally, our Human Resources, Finance and Legal departments work with our CEO 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 LDICC briefing materials, and to implement the decisions of the LDICC. Our Chief People Officer also meets separately with the LDICC's compensation consultant, Compensia (as defined below), to convey information on proposals that management may make to the LDICC, as well as to allow Compensia to collect information about the Company to develop its recommendations. In addition, our CEO 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 the annual total direct compensation for such executive officers directly to the LDICC. In the case of our CEO's compensation, Compensia reviews and analyzes relevant competitive market data with the LDICC, and makes a recommendation regarding our CEO's compensation to the LDICC.

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

Role of Compensation Consultant

Under its charter, the LDICC has the authority, at the Company's expense, to retain legal and other consultants, accountants, experts and compensation or other advisors of its choice to assist the LDICC in connection with its functions. Since 2012, the LDICC has retained Compensia, Inc. ("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 connection with an annual review of our executive compensation program for 2021, Compensia provided the following services:

- reviewed and provided recommendations on the composition of our compensation peer group, and provided compensation data relating to certain executives at the selected peer group companies;
- conducted a review of the target total direct compensation arrangements for our executive officers;
- provided advice on executive officers' compensation, including the composition of base salary, our short-term incentive (cash bonus) plan and long-term incentive (equity) plans;
- conducted a review of the annual cash retainers and equity incentive compensation opportunities for our non-employee directors under our non-employee director compensation program;
- assisted with the design of our 2021 performance-based equity awards for our CEO, CFO and COO, including an analysis of market trends and best practices relating to performance-based equity awards;
- updated the LDICC on emerging trends/best practices and regulatory requirements in the area of executive officer and non-employee director compensation, including cash and equity compensation;
- provided advice and recommendations regarding non-executive employee compensation equity awards;
- assisted in the preparation of materials for executive compensation proposals in advance of LDICC meetings, including 2021 compensation levels for certain of our executive officers and the design of our cash bonus, equity award, severance, and change in control programs and other executive benefit programs; and
- reviewed and advised the LDICC on materials relating to executive compensation prepared by management for LDICC consideration.

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

The LDICC has also retained Compensia for assistance in reviewing and making recommendations to our Board regarding the compensation program for our non-employee directors and to provide competitive market data and materials with respect to non-employee director compensation to the LDICC.

In March 2021, the LDICC reviewed the independence of Compensia under applicable compensation consultant independence rules and standards and determined that Compensia did not have any relationships with the Company or any of its executive officers or directors or any conflicts of interest that would impair Compensia's independence.

Use of Competitive Data

To monitor the competitiveness of our executive officers' compensation, in November 2020, the LDICC approved a compensation peer group (the "Peer Group") to be used in connection with its 2021 compensation deliberations that analyzed the compensation of executive officers in comparable positions at similarly-situated companies. In March 2021, based on a significant increase in our market capitalization, the LDICC approved changes to the Peer Group for its 2021 compensation deliberations. The data gathered from the Peer Group was used as one factor in setting executive officer pay levels (including cash and equity compensation), incentive plan practices, severance and change-in-control practices, equity utilization pay/performance alignment and non-employee director compensation.

In addition to reviewing the compensation practices of the Peer Group, the LDICC looks to the collective experience and judgment of its members and advisors, as well as relevant industry survey data, in determining the target total direct compensation and the various compensation components provided to our executive officers.

2021 Peer Group

The Peer Group for setting 2021 compensation included a cross-section of publicly traded, U.S.-based companies of similar size to us based primarily on revenue (less than $600 million) and enterprise value (between $800 million and $13 billion), with additional refinement criteria based on number of employees, R&D expenditures, and the related industries of the companies (biotechnology, life sciences, chemicals, food and personal products) and input from the LDICC and management. Based on these criteria, the following companies were included in the Peer Group approved in March 2021 by the LDICC for use in assessing the market position of our executive compensation for 2021:

2021 Peer Group

American Vanguard	e.l.f. Beauty	Livent
Balchem	Freshpet	Medifast
Berkeley Lights	Green Thumb Industries	Phibro Animal Health
Beyond Meat	Hawkins	Twist Bioscience
Codexis	Hims & Hers Health	USANA Health Sciences

While the LDICC does not believe that the Peer Group data is appropriate as a stand-alone tool for setting executive compensation due to the unique nature of our business, it believes that this information is a valuable resource during its decision-making process.

The LDICC references peer data as data points in its overall determination of our executive compensation program, but does not benchmark its compensation decisions to any particular level or against any specific member of the Peer Group. The LDICC believes the current total target compensation of our NEOs is reasonable and appropriate because we operate in a highly competitive and rapidly evolving market, and we expect competition among companies in our market to continue to increase. Our ability to compete and succeed in this environment is directly correlated to our ability to recruit, incentivize and retain talented individuals in the areas of product development, sales, marketing, services and general and administrative functions. The market for skilled personnel in these areas is very competitive and our LDICC believes that our current target level for total direct compensation is necessary to both retain our critical executive officers and attract top talent to contribute to the Company's growth and success.

Equity awards have been a significant component in our overall compensation package, and we believe that they will remain an important tool for attracting, retaining and motivating our key talent by providing an opportunity for ownership, participation and wealth creation as a result of our long-term success. To this end, in May 2021, the LDICC approved annual equity awards for our CFO and CLO and special performance-based equity awards for our CEO, CFO and COO, the details of which are described below under "2021 Compensation—Equity Awards—2021 Performance Equity Awards." Our 2021 CEO performance equity award (the "CEO PSU Award") was conditioned on the approval by our stockholders and was approved by our stockholders in July 2021.

In determining the size of the annual equity awards, the LDICC considered the retention value of existing awards held by our NEOs (taking into account option exercise prices and the prevailing market value of our common stock), the executive officers' overall compensation packages, practices at the companies in the Peer Group and the responsibilities, performance, anticipated future contributions and retention risk of our NEOs. In determining the size of each of the 2021 Performance Equity Awards granted to certain of our NEOs the LDICC considered the criticality of each of their roles and low retention value of existing awards held by such NEOs.

Compensation Risk Management

In November 2020 and November 2021, the LDICC determined, through discussions with management and Compensia, that our policies and practices of compensating our employees, including our executive officers, are not reasonably likely to have a material risk to us. The assessments conducted by the LDICC focused on the key terms of our bonus plans and equity compensation programs in 2020 and 2021, and our plans for such programs in 2022, evaluating the risk factors in our compensation programs in four key areas—financial, operational, reputational, and talent. The LDICC focused on whether our compensation programs created incentives for risk-taking behavior and whether existing risk mitigation features and policies were sufficient in light of the overall structure and composition of our compensation programs. Among other things, the LDICC considered the following aspects of our overall compensation programs:

- Our cash bonus plan applies only to our executive officers and certain employees involved in sales activities and provides for a maximum total bonus funding available for payout of 120% of target funding, with payouts ranging from 0% to 200% of an individual's target annual cash bonus opportunity, emphasizing Company performance over individual performance objectives.

  Long-term equity compensation programs are designed to reward executives and other participants for driving sustainable and profitable growth for stockholders;
- Equity incentive awards for our executive officers have included different types of equity instruments, which helps to diversify the executive officers' interests and limit excessive risk taking;
- The vesting periods for our time-based equity awards are designed to encourage executives and other participants to focus on sustained stock price appreciation;
- Our system of internal controls over financial reporting, standards of business conduct, and compliance programs reduce the likelihood of manipulation of our financial performance to enhance payments under our bonus and sales compensation plans;
- We have a clawback or recoupment policy for certain performance-based incentive compensation of our executive officers; and
- Our Insider Trading Policy prohibits all employees from pledging stock, engaging in short sales, or hedging transactions involving our stock.

Based on these considerations, the LDICC determined that our compensation programs, including our executive and non-executive compensation programs, provide an appropriate balance of incentives and do not encourage our executive officers or other employees to take excessive risks or otherwise create risks that are likely to have a material adverse effect on us.

2021 Compensation

Background

In designing the compensation program and making decisions for our executive officers for 2021, the LDICC sought to balance achievement of critical operational goals with retention of key personnel, including our executive officers. Accordingly, the LDICC focused in particular on implementing a robust equity compensation program in order to provide strong retention incentives in a challenging and highly competitive environment for top talent. It also focused on cash management in setting target total cash compensation (including base salary and target annual cash bonus opportunity levels) for our executive officers. Another key theme for 2021 was establishing strong incentives to drive our performance, including continued emphasis on Company performance goals over individual goals in the 2021 cash bonus plan and on equity compensation for longer-term upside potential and sharing in Company growth.

Base Salaries

During 2021, the LDICC reviewed the base salaries, target annual cash bonus opportunities and target total cash compensation of our executive officers against our Peer Group and 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 (a) an increase to the base salary of Mr. Melo from $650,000 to $750,000 effective May 16, 2021, in recognition of his criticality to driving the Company's strategic growth and investment initiatives, (b) an increase to the base salary of Mr. Kieftenbeld from $420,000 to $460,000 effective April 1, 2021, in recognition of his expanded role as the Company's Chief Administration Officer and in alignment with general market increases, and (c) an increase to the base salary of Ms. Kelsey from $395,000 to $425,000, effective May 16, 2021, to remain in line with our targeted competitive market for total cash compensation. Mr. Alvarez's base salary remained unchanged in 2021.

Cash Bonuses

In November 2020, the LDICC approved the 2021 cash bonus plan architecture for our executive officers consistent with the cash bonus plan for 2020, pending the approval of quarterly and annual target levels for each performance metric upon finalization of the Company's business plan for 2021. In May 2021, the target levels for the performance metrics were approved and the weighting of certain performance metrics selected for use in the 2021 cash bonus plan was amended, as further detailed below.

Under the 2021 cash bonus plan, our executive officers were eligible for cash bonuses based on the achievement of Company performance metrics for each quarter in 2021, with a portion of their annual target cash bonus opportunities allocated to annual Company and individual performance. The 2021 cash bonus plan provided for funding and payout of cash bonus awards if the Company achieved target levels set for GAAP revenue (both quarterly and annual), operating expense (both quarterly and annual), product gross margin (quarterly) and total gross margin (annual). For purposes of the 2021 bonus plan, "GAAP revenue" means total Company revenue as reported, "operating expense" means total cash operating expense (i.e., excludes such items as depreciation and amortization and stock compensation), "product margin" means margin generated relative to product related revenue, and "gross margin" means margin generated relative to total revenue. Payouts under the 2021 cash bonus plan were made following a review of our results and performance each quarter and, for the fourth quarter and annual components, following a review that occurred in March 2022. The 2021 cash bonus plan provided for a 60% weighting for quarterly achievement (with each quarter worth 15% of the total bonus fund for the year) and 40% for full year achievement. The 2021 cash bonus plan and the selection of these performance metrics intended to provide a balanced focus on both our long-term strategic goals and shorter-term quarterly operational goals.

The total funding possible under the 2021 cash bonus plan was based on a cash value (or the "target bonus fund") determined by the executive officers' target annual cash bonus opportunities. The target annual cash bonus opportunities for our executive officers in 2020 varied by individual, but were generally set between 50% and 100% of their annual base salary. In May 2021, in connection with the Board's review of the annual 2021 Company business plan and budget, the LDICC reviewed our executive officers' target annual cash bonus opportunities as part of its review of target total cash compensation for similar roles among executive officers at companies in the 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 no changes to the target annual cash bonus opportunities for our executive officers.

The quarterly and annual funding of the 2021 cash bonus plan was based on achievement of the following company performance metrics for the applicable quarter and full year 2021: GAAP revenue (weighted 50% for each quarterly and annual period), operating expenses (weighted 20% for each quarterly and annual period), product gross margin (weighted 30% for the quarterly period), and total gross margin (weighted 30% for the annual period). For each quarterly period and for the annual period under the 2021 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. In May 2021, the weighting of the operating expense and product gross margin and total gross margin metrics were recalibrated to reflect the impact on such performance metrics by consumer brands' growth and increased investment in the selling and marketing efforts to support the Company's brand growth, due to expected launch of five additional consumer brands in the second half of 2021. Prior to the amendment, operating expenses was weighted at 30% for each quarterly and annual period, and product/total gross margin was weighted at 20% for the quarterly and annual periods.The associated targets of each of these two metrics were not modified such that the same levels of achievement were required. The LDICC determined that it was reasonable and necessary to recalibrate of the weighting of these two metrics in order for the 2021 cash bonus plan to reflect the Company's investment in the Company's brand growth as noted above, and to preserve incentive and retentive value at a time when employee engagement and focus are critical. The LDICC did not modify the weighting of GAAP revenue, which comprises the largest portion of the 2021 cash bonus plan. The 2021 cash bonus plan remained challenging and difficult to achieve without meaningful effort.

As shown below, if we were to achieve the "minimum" level for any performance metric, we would receive 50% funding for that metric. If the collective funding of all performance metrics was below 50%, we would receive no funding. If we were to achieve between the "minimum and "target" levels for any performance metric, we would receive pro rata funding between 50% and 100% for that metric. If we were to achieve between the "target" and "maximum" levels for any performance metric, we would receive pro rata funding between 100% and 200% for that metric. Funding was capped at 200% of target for each performance metric regardless of performance exceeding the "maximum" level.

		Performance Range			Payout Range		
Performance Metrics	**Weight**	**Min**	**Target**	**Max**	**Min**	**Target**	**Max**
GAAP Revenue ($m)	50%	80%	100%	120%	50%	100%	200%
Operating Expenses ($m)	20%	90%	100%	110%	50%	100%	200%
Product/Total Gross Margin[(1)] %	30%	90%	100%	110%	50%	100%	200%

(1) Product gross margin for each quarterly period and total gross margin for the annual 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 approval of the LDICC. Payouts for the annual bonus period would be made from the aggregate funded amount 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 LDICC 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 LDICC's assessment of Company achievement, and with respect to the annual bonus, the LDICC'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 performance goals, and his or her demonstrating our core values. Actual payment of any bonuses with respect to 2021 remained subject to the final approval of the LDICC.

Company Performance Metrics. The quarterly and annual weighting and actual achievement level for each Company performance metric are described below.

The applicable target levels for each quarter were discussed and evaluated based on quarterly and annual performance and continued development of our business and operating plans for 2021 and beyond. In March 2022, the LDICC discussed and evaluated the fourth quarter 2021 as well as the full year 2021 results. Achievement levels were approved by the LDICC following each period under the 2021 annual cash bonus plan. The annual and fourth quarter target levels were amended by the LDICC in November 2021 to reflect new revenue guidance provided internally and externally. Due to supply chain challenges in the third and fourth quarters of 2021, including access to packaging components and ingredients, our full year 2021 revenue estimate was reduced in November 2021. As a result, the LDICC reviewed the GAAP revenue target performance metric and approved amendments to the minimum, target and maximum levels of such performance metric for the fourth quarter and annual periods to (i) maintain the alignment of such metric with revenue guidance provided to the market, while still maintaining GAAP revenue as a challenging goal for such periods, and (ii) continue the effectiveness of the 2021 bonus plan as an incentive and retention tools not only to our NEOs but also to the other employees under such plan, especially given the highly competitive market in which we operate.

Degree of Difficulty in Achieving Performance Goals. The LDICC considered the likelihood of achievement when recommending and approving, respectively, the Company and individual performance goals and bonus plan structures for each of the 2021 annual cash bonus plan periods, but it did not undertake a detailed statistical analysis of the difficulty of achievement of each measure. For 2021, the LDICC considered the 70% 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 and process development, business development, and exceptional levels of effort on the part of the executive leadership team, as well as favorable external conditions.

2021 Quarterly and Annual Bonus Plan Funding and Award Decisions. In each of May 2021, August 2021, November 2021 and March 2022, the LDICC determined that our quarterly and annual performance goals were achieved as follows:

Company Performance Goal	Weight	Weighted Achievement Level	Funding Level
Q1			
GAAP Revenue	50%	48%	
Operating Expenses	20%	19%	
Product Gross Margin	30%	60%	
Total Q1	**100%**	**127%**	**127%**
Q2			
GAAP Revenue	50%	31%	
Operating Expenses	20%	25%	
Product Gross Margin	30%	0%	
Total Q2	**100%**	**56%**	**85%**(1)
Q3			
GAAP Revenue	50%	0%	
Operating Expenses	20%	0%	
Product Gross Margin	30%	0%	
Total Q3	**100%**	**0%**	**64%**(1)
Q4			
GAAP Revenue	50%	59%	
Operating Expenses	20%	0%	
Product Gross Margin	30%	0%	
Total Q4	**100%**	**59%**	**85%**(1)
ANNUAL			
GAAP Revenue	50%	51%	
Operating Expenses	20%	12%	
Total Gross Margin	30%	37%	
Total Annual	**100%**	**100%**	**99%**

(1) The LDICC approved discretionary increases in the cash bonus paid to all eligible participants under the cash bonus plan, including the named executive officers, for the quarterly bonus payments in the second, third and fourth quarters of 2021 as discussed below.

Individual Performance Goals. For the annual portion of the 2021 cash bonus plan tied to individual performance, the LDICC considered several factors, including the following:

- Our CEO's performance reflects his overall leadership of the Company. Under his leadership, the Company delivered strong year-over-year sales revenue growth, oversaw strategic partnerships and new brand launches, enhanced customer impact, and improved overall Company operations. Importantly, he also led on advancing strategic initiatives and transactions for the Company.
- Our CFO's performance reflects his leadership of the Company's finance, human resources, IT, corporate communications, investor relations, and ESG functions. Under his leadership, the Company made significant improvements in our financial processes, internal controls, cash management, and investor relations activities. He oversaw a successful recapitalization of the Company's balance sheet, including the planning and execution of large, complex equity and debt offerings. He led the Company's inaugural ESG report and has been instrumental in the completion of strategic transactions, M&A and new brand launches.

- Our COO's performance reflects his leadership of the Company's manufacturing, engineering, environmental health & safety, and supply chain functions. Under his leadership, the Company is on track to complete construction of the new Brazil manufacturing facility, and the Company continued to demonstrate a strong safety track record and scale the development of molecules into production, launched new consumer brands and improved consumer brand supply chain operations.
- Our CLO's performance reflects her leadership of the Company's legal and compliance functions. Under her leadership, the Legal function provided critical support for the execution of strategic partnerships, M&A transactions, and equity and debt financing transactions, the launch of new brands, the management of ongoing litigation and investigation matters, leadership on the Company's ESG and DEI initiatives, and improvements in the Company's compliance program.

The LDICC considered individual and company performance in approving the following cash bonus awards under the 2021 cash bonus plan:

Name	2021 Cumulative Quarterly Bonus Payouts ($)	2021 Annual Portion Bonus Payout ($)	2021 Aggregate Annual and Quarterly Bonus Payouts ($)	Annual Bonus Target ($)	2021 Actual Bonus Earned as a % of Target Bonus
John Melo	250,980	445,500	696,480	$730,000	95%
Han Kieftenbeld	151,712	282,348	434,060	$447,700	97%
Eduardo Alvarez	191,950	396,000	577,950	$500,000	116%
Nicole Kelsey	74,037	84,150	158,187	$209,500	76%

We believe that the payment of these awards was appropriate because the 2021 cash bonus plan appropriately held our NEOs accountable for achievement of Company and individual goals, and the payouts were reasonable and appropriate in light of our progress towards our business objectives. With respect to the quarterly bonus payments in the second, third and fourth quarters of 2021, the LDICC, to recognize the effective execution and significant progress made on certain critical business goals, in its discretion approved amounts in excess of the applicable funded levels under the cash bonus plan, which resulted in additional cash bonus payouts to each of our NEOs in the amount of $132,650 in the aggregate to Mr. Melo, $82,248 in the aggregate to Mr. Kieftenbeld, $89,400 in the aggregate to Mr. Alvarez, and $37,778 in the aggregate to Ms. Kelsey, as reflected in the "Summary Compensation Table" below.

Performance Bonuses. In addition, in May 2021, the LDICC approved cash bonuses of (a) $400,000 to Mr. Melo in recognition of his extraordinary efforts in negotiating, structuring and consummating certain transformative transactions for the Company in the first quarter of 2021, including the sale of exclusive rights to the Company's flavor and fragrance product portfolio DSM Nutritional Products Ltd., (b) $100,000 to Mr. Kieftenbeld in recognition of his extraordinary efforts in procuring and negotiating a licensing transaction with Ingredion Incorporated, and (c) $75,000 to Mr. Alvarez in recognition of his extraordinary efforts in assisting in the negotiation and closing of the transaction with Ingredion Incorporated. In December 2021, the LDICC approved a cash bonus of $5,000 to Ms. Kelsey in recognition of her efforts in resolving a government investigation.

Equity Awards

The LDICC approved equity awards for the executive officers consisting of time-based focal awards, performance-based equity awards, and one-time recognition awards, as described below.

2021 Focal Equity Awards. With respect to the focal awards, the LDICC determined the allocation of equity awards between stock options and RSU awards after consultation with Compensia, in evaluating the practices of our Peer Group and survey data and in consultation with management, taking into consideration, among other things, the appropriate balance between rewarding previous performance, retention objectives, upside value potential tied to our and the executive officer's future performance and the mix of the executive officer's current vested and unvested equity holdings. The size of the focal awards varied among the applicable NEOs based on the value of unvested equity awards already held by him or her, his or her relative contributions during 2020, and anticipated levels of responsibility among the NEOs for key corporate objectives in 2021.

In May 2021, the LDICC approved (i) a focal award to Mr. Kieftenbeld of an RSU award covering 100,000 units subject to the terms described below and (ii) a focal award to Ms. Kelsey of an RSU award covering 37,500 units and an option to purchase 12,500 shares of our common stock subject to the terms described below. In lieu of time-based focal awards, Messrs. Melo and Alvarez received performance-based equity awards as described below.

In accordance with our policy regarding equity award grant dates, the focal awards to Mr. Kieftenbeld and Ms. Kelsey were granted on May 24, 2021, the first business day of the week following the week in which such awards were approved, with the exercise price of the stock option granted to Ms. Kelsey set at $13.39 per share, the closing price of our common stock on Nasdaq on such date, in accordance with the terms of the 2020 EIP. This stock option vests over four years, with 25% of the shares subject to the option vesting one year from the vesting commencement date on May 24, 2021, and the remainder vesting over the following three years in equal monthly installments. The RSU awards to Mr. Kieftenbeld and Ms. Kelsey vest in three equal annual installments on June 1 of each of 2022, 2023 and 2024. Each unit granted pursuant to the focal awards represents a contingent right to receive one share of our common stock for each unit that vests.

2021 Performance Equity Awards. We believe that granting performance-based RSU awards incentivizes our executive officers in a manner that aligns their interests with our long-term strategic direction and the interests of our stockholders in support of long-term value creation. As such, in May 2021, the LDICC and our Board approved, as applicable (the "2021 Performance Equity Awards"):

- CEO PSU Award: a grant to Mr. Melo of a performance-vesting restricted stock unit award representing the right to receive up to 6,000,000 shares of our common stock under our 2020 EIP based on the achievement of four specified stock price performance metrics (as detailed below) over a four-year period, contingent upon approval by our stockholders of the CEO PSU Award, which approval was obtained at our 2021 special meeting of stockholders held on July 26, 2021. Upon approval of the CEO PSU Award, the 2018 CEO PSO (as described below) was automatically cancelled and forfeited.
- CFO PSU Award: a grant to Mr. Kieftenbeld of a performance-vesting restricted stock unit award (the "CFO PSU Award") representing the right to receive up to 300,000 shares of our common stock under our 2020 EIP on substantially the same terms as the CEO PSU Award.
- COO PSU Award: a grant to Mr. Alvarez of a performance-vesting restricted stock unit award (the "COO PSU Award") representing the right to receive up to 600,000 shares of our common stock under our 2020 EIP subject to the achievement of certain highly strategic operational goals (as detailed below) prior to December 31, 2022.

In accordance with our policy regarding equity award grant dates, the COO PSU Award was granted on May 24, 2021, and the CEO PSU Award and the CFO PSU Award were granted on August 2, 2021, the first business day of the week following the week in which the CEO PSU Award was approved by our stockholders.

In structuring the 2021 Performance Equity Awards, our Board and the LDICC, in consultation with Compensia, considered at length which performance metrics would both meaningfully drive Company performance and create significant stockholder value. Our Board and the LDICC considered a variety of factors, including, our continued growth, the highly competitive and dynamic synthetic biotechnology industry and the difficulty of predicting future performance in such an environment. In establishing the stock price-based performance metric of the CEO PSU

Award and the CFO PSU Award, our Board and the LDICC took into consideration a variety of factors, including the Company's growth trajectory. Accordingly, our Board and the LDICC concluded that a performance metric requiring the sustained achievement of increasing share prices over a four-year performance period best enabled the Company to incentivize Messrs. Melo and Kieftenbeld over a longer-term horizon and align their respective success with that of our stockholders. In determining the size and operational performance metrics of the COO PSU Award, the LDICC considered the retention value of existing awards held by Mr. Alvarez and the strategic relevance of certain operational goals to the Company's objectives and concluded that the performance metrics under the COO PSU Award best incentivizes and retains Mr. Alvarez until the completion and full operation of the Company's manufacturing plant in Barra Bonita, Brazil and the facility in Reno, Nevada.

Our Board and the LDICC believe the selected structure and terms of the 2021 Performance Equity Awards (as described in detail below) will motivate our CEO, CFO, and COO to perform against challenging and reasonably aggressive targets in alignment with our stockholders and will reward each of them for taking actions today that will create sustainable value for our stockholders for years to come. Our Board and the LDICC also reviewed similar performance-based equity awards and total executive compensation of other public companies' executives as a reference point for determining the size and terms of the 2021 Performance Equity Awards.

Upon our stockholders' approval, and immediately prior to the effectiveness of the CEO PSU Award, the performance-based stock option to purchase up to 3,250,000 shares of our common stock granted to Mr. Melo in 2018 (the "2018 CEO PSO") was automatically cancelled and forfeited. In proposing the CEO PSU Award, the LDICC considered that the performance metrics of the 2018 CEO PSO had not been achieved and could not be achieved prior to the conclusion of its term, due to changes in the Company's business and, as such, it no longer provided the intended incentive and retentive value for our CEO, whose leadership is critical to guide the Company through an unprecedented period of growth, transformation and innovation, including strategic partnerships and new brand launches. The LDICC also reviewed the size and vesting schedule for the remaining unvested portion of all other outstanding equity awards held by our CEO and determined that they were likewise insufficient to effectively incentivize performance and retention.

CEO PSU Award and CFO PSU Award

The CEO PSU Award and CFO PSU Award are performance-based RSU awards with a direct relationship between the value of the equity awards and the fair market value of our common stock, thus Messrs. Melo and Kieftenbeld will receive compensation from their respective awards only to the extent that the Company achieves the applicable stock price-based performance milestones.

<u>Performance Metrics & Vesting</u>. The CEO PSU Award and the CFO PSU Award will be eligible to vest if the Company achieves four separate stock price-based performance metrics (each, a "Stock Price Metric") from the date of grant through July 1, 2025 (the "Performance Period") and any portion of the CEO PSU Award or the CFO PSU Award, as applicable, for which performance is achieved will vest subject to Messrs. Melo or Kieftenbeld's continued service as our CEO and CFO, respectively ("CEO/CFO Service"), with certain limited exceptions, as discussed below.

<u>Stock Price Performance Metrics</u>. Each of the CEO PSU Award and CFO PSU Award are divided into four equal tranches as described in the Performance Metrics Table below (each a "Tranche"). If the Target Volume Weighted Average Price, or "Target VWAP," as described below, applicable to a Tranche is achieved during the Performance Period, that Tranche's shares will become eligible to vest subject to the applicable CEO/CFO Service on the applicable vesting dates, as discussed below. The units underlying any Tranche for which performance has been

achieved and that are eligible to vest over time are referred to as "Eligible RSUs." Each unit granted pursuant to the CEO PSU Award and the CFO PSU Award represents a contingent right to receive one share of our common stock for each unit that vests.

Performance Metrics Table

Tranche	Target VWAP	CEO PSU Total Tranche RSUs	CFO PSU Total Tranche RSUs	Earliest Vesting Commencement Date
"**Tranche 1**"	$22.00	1,500,000 RSUs	75,000 RSUs	Not Applicable
"**Tranche 2**"	$27.00	1,500,000 RSUs	75,000 RSUs	July 1, 2023
"**Tranche 3**"	$32.00	1,500,000 RSUs	75,000 RSUs	July 1, 2024
"**Tranche 4**"	$37.00	1,500,000 RSUs	75,000 RSUs	July 1, 2025
Total:		**6,000,000 RSUs**	**300,000 RSUs**	

The Stock Price Metric for a Tranche is achieved if the VWAP of our common stock for both a 120-trading day period and the 30-trading day period ending on the final day of the 120-trading day period equal or exceed the Target VWAP set forth in the Performance Metrics Table for such Tranche during the Performance Period. The Tranches will be measured separately and multiple Tranches may be achieved simultaneously.

Our Board or the LDICC will certify whether the Stock Price Metric for any Tranche has been met.

The Target VWAP 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 PSU Award and the CFO PSU Award, as applicable.

As further discussed above, our Board and the LDICC consider the Stock Price Metrics to be a challenging hurdle. Our Board and the LDICC set the Stock Price Metrics to drive enhanced stockholder returns, and to further align Messrs. Melo and Kieftenbeld's compensation opportunities to long-term stockholder interests.

Time-Based Vesting Following Achievement of the Stock Price Metric. Upon our Board's or LDICC's certification of achievement of a Tranche's Stock Price Metric, 25% of the shares in such Tranche will vest with the remaining 75% vesting over the three subsequent quarters. For all but the first of the four Tranches, vesting will commence no earlier than "Earliest Vesting Commencement Date" for such Tranche set forth in the *Performance Metrics Table* above. If the Stock Price Metric is achieved after the Earliest Vesting Commencement Date, the vesting schedule will commence on the next occurring July 1, October 1, January 1 or April 1. For the first Tranche only, upon achievement of the Stock Price Metric, the vesting schedule will commence on the next occurring July 1, October 1, January 1 or April 1.

Employment Requirement for Continued Vesting. Messrs. Melo or Kieftenbeld, as applicable, must be providing CEO/CFO Services at the time of the achievement of a Tranche's Stock Price Metric to be eligible to vest in the resulting Eligible RSUs. Mr. Melo must be employed by the Company, as its CEO, and Mr. Kieftenbeld must be employed by the Company, as its CFO, or, in both cases, in another employment position, on each applicable time-based vesting date following the achievement of the applicable Stock Price Metric.

Termination of Employment. Except in the context of a change of control of the Company, there will be no acceleration of vesting of the CEO PSU Award or the CFO PSU Award if the employment of Mr. Melo or Mr. Kieftenbeld, respectively, is terminated, or if they die or become disabled. In other words, termination of Mr. Melo or Mr. Kieftenbeld's employment with the Company will preclude their respective ability to earn any then-unvested portion of the CEO PSU Award or CFO PSU Award, as applicable, following the date of his termination.

Change of Control. If the Company experiences a change of control, such as a merger with or purchase by another company, vesting under the CEO PSU Award and CFO PSU Award will not automatically accelerate.

In the event of a change of control of the Company, the performance under the CEO PSU Award and the CFO PSU Award will be determined as of the change of control. For this change of control determination, a Stock Price Metric relating to any Tranche that has not yet been achieved prior to the change of control will be deemed achieved if the per share price (plus the per share fair market value of any other consideration) received by our stockholders in the change of control equals or exceeds the applicable Stock Price Metric. To the extent a Stock Price Metric 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 RSUs"), and such COC Time-Based RSUs will vest in four equal installments, with the first installment vesting upon the later of the date of the change of control and the Earliest Vesting Commencement Date applicable to such Tranche as set forth in the *Performance Metrics Table* above and quarterly thereafter (except that the first Tranche will commence vesting on the date of the change of control and quarterly thereafter), subject to the CEO/CFO Service on each such vesting date.

Notwithstanding the foregoing, if the employment of either of Mr. Melo or Mr. Kieftenbeld is terminated without cause or he resigns for good reason in connection with the change of control, any then-unvested Eligible RSUs and then-unvested COC Time-Based RSUs will accelerate, subject to his satisfaction of certain terms and conditions, including, but not limited to delivery of a release of claims, pursuant to the terms of the Severance Plan (as described below) and his related participation agreement thereunder.

To the extent a Stock Price Milestone for a Tranche is not achieved as a result of the change of control of the Company, such Tranche will be forfeited automatically immediately prior to closing of the change of control and will never become vested.

The 2020 EIP provides that any or all outstanding awards issued thereunder, including the CEO PSU Award and CFO PSU Award, may be continued, assumed or substituted (including, but not limited, with payment in cash) by the successor or acquiring corporation (if any) in a change of control of the Company. If the successor or acquiring corporation (if any) of the Company refuses to assume, convert, replace or substitute the CEO PSU Award and CFO PSU Award in connection with a change of control, 100% of Messrs. Melo and Kieftenbeld's then-unvested Eligible RSUs and then-unvested COC Time-Based RSU will accelerate and become vested effective immediately prior to the closing of the change of control.

The treatment of the CEO PSU Award and CFO PSU Award upon a change of control of the Company is intended to align Messrs. Melo and Kieftenbeld's interests with the Company's other stockholders with respect to evaluating potential change of control offers.

Tax Withholding. Unless determined otherwise by the LDICC in advance of any vesting date, the tax withholding obligations owed upon settlement of any portion of the CEO PSU Award and CFO PSU Award will be paid by a "broker-assisted" or "same-day sale."

Clawback. In the event of a restatement of the Company's financial statements previously filed with the SEC as a result of material noncompliance with financial reporting requirements ("restated financial results") that results in a decline of the trading prices of our common stock below the Stock Price Metrics and it is determined to be necessary to complete such a restatement prior to December 31, 2028, the Company may require forfeiture (or repayment, as applicable) of the portion of the CEO PSU Award and/or CFO PSU Award in excess of what would have been earned or paid based on the restated financial results (whether or not the CEO and/or CFO remains an employee of the Company at such time).

COO PSU Award

The COO PSU Award is a performance-vesting RSU award with a direct relationship between the value of the equity awards and the achievement of certain highly strategic operational goals to the Company prior to December 31, 2022. Thus, Mr. Alvarez will receive compensation from his award only to the extent that the Company timely achieves six separate operational performance metrics related to product production, brand launch, and manufacturing facility development (each, a "COO Performance Metric") from January 1, 2021 through December 31, 2022 (the "COO Performance Period"). Each unit granted pursuant to the COO PSU Award represents a contingent right to receive one share of our common stock for each unit that vests.

Performance Metrics & Vesting. The COO PSU Award, which is up to 600,000 shares of our common stock, is divided into six tranches as described below (each a "COO Tranche"). If the COO Performance Metric applicable to a COO Tranche is achieved during the COO Performance Period, that Tranche's shares will vest. The units underlying any Tranche for which performance has been achieved are referred to as "Eligible RSUs."

Two of the COO Tranches relate to our Reno plant. 90,000 shares under the COO PSU Award will vest upon achievement of each of the following relating to our Reno plant: (i) certain production goals by December 31, 2021, (ii) certain production transitions by December 31, 2021, and (iii) certain plant commission and scale goals by December 31, 2022.

Four of the COO Tranches relate to our Barra Bonita plant. 144,000 shares under the COO PSU Award will vest upon achievement of certain construction goals by January 31, 2022. 96,000 shares under the COO PSU Award will vest upon certain plant commission goals by March 31, 2022. 90,000 shares under the COO PSU Award will vest upon achievement of each of the following: (i) certain contract transfer and production plan goals by December 31, 2022, and (ii) certain production goals by December 31, 2022.

The details of the COO PSU Award goals pertain to confidential company development and business plans, the disclosure of which in any additional granularity would result in competitive harm to the Company. Our Board and the LDICC believed that each of these goals would be significantly challenging and would require a high level of performance in order to be achieved.

The LDICC will certify whether the COO Performance Metric for any COO Tranche has been met after the conclusion of the COO Performance Period. There will be no partial or additional achievement to the extent achievement is below or above the target COO Performance Metric achievement specified above. Multiple COO Performance Metrics may be achieved simultaneously. The Eligible RSUs will vest two weeks following the certification date, subject to Mr. Alvarez's continuous service.

Employment Requirement for Continued Vesting. Mr. Alvarez must be providing services at the time the LDICC certifies achievement of a COO Tranche, with the COO Performance Metric eligible to vest in the resulting shares.

Termination of Employment. Except in the context of a change of control of the Company, there will be no acceleration of vesting of the COO PSU Award in the event of termination, death, or disability. In other words, termination of Mr. Alvarez's employment with the Company will preclude his ability to earn any then-unvested portion of the COO PSU Award following the date of his termination.

Change of Control. If the Company experiences a change of control during the COO Performance Period, such as a merger with or purchase by another company, the COO Performance Metric for any COO Tranche that has not yet been achieved will be deemed achieved effective as of immediately prior to the closing of the change of control (such resulting RSUs, the "COO COC RSUs"). The COO COC RSUs will be unvested on the closing date and will vest on December 31, 2022, subject to Mr. Alvarez's continuous service on the closing date and on such vesting date.

Notwithstanding the foregoing, if the employment of Mr. Alvarez is terminated without cause or he resigns for good reason in connection with the change of control of the Company, any then-unvested COO COC RSUs will accelerate, subject to Mr. Alvarez's satisfaction of certain terms and conditions, including, but not limited to delivery of a release of claims, pursuant to the terms of the Severance Plan (as described below) and his related participation agreement thereunder.

The 2020 EIP provides that any or all outstanding awards issued thereunder, including the COO PSU Award, may be continued, assumed or substituted (including, but not limited, with payment in cash) by the successor or acquiring corporation (if any) in a change of control of the Company. If the successor or acquiring corporation (if any) of the Company refuses to assume, convert, replace or substitute the COO PSU Award in connection with a change of control, 100% of Mr. Alvarez's then-unvested COO COC RSUs will accelerate and become vested effective immediately prior to closing of the change of control.

The treatment of the COO PSU Award upon a change of control of the Company is intended to align Mr. Alvarez's interests with our other stockholders with respect to evaluating potential change of control offers.

Tax Withholding. Unless determined otherwise by the LDICC in advance of any vesting date, the tax withholding obligations owed upon settlement of any portion of the COO PSU Award will be paid by a "broker-assisted" or "same-day sale."

Clawback. The COO PSU Award is subject to clawback or recoupment pursuant to any compensation clawback or recoupment policy adopted by our Board or as required by law during the term of Mr. Alvarez's service or other service that is applicable to him. In addition to any other remedies available under such policy, applicable law may require the cancellation of the COO PSU Award (whether vested or unvested) and the recoupment of any gains realized with respect to such award.

2021 Recognition Equity Awards. In May 2021, the LDICC granted Mr. Melo an RSU award to acquire 149,365 shares, with an approximate grant date value of $2 million, vesting immediately, in recognition of his extraordinary efforts in negotiating, structuring and consummating certain transformative transactions for the Company in the first quarter of 2021, including the sale of exclusive rights to the Company's flavor and fragrance product portfolio to DSM Nutritional Products Ltd.

Other Compensation Elements

Severance Plan

In November 2013, the LDICC 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. As in prior years, in March 2021, the LDICC reviewed the terms of the Severance Plan and elected to allow it to automatically renew. The LDICC adopted the Severance Plan to provide a consistent 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 NEOs, and all senior level employees of the Company 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, CFO and COO are entitled to the rights and benefits provided for in their respective 2021 Performance Equity Awards in connection with a change of control of the Company, as described above and (ii) in the event of any conflict between the terms of the respective 2021 Performance Equity Awards and the Severance Plan relating to accelerated vesting of equity awards, the terms of each respective 2021 Performance Equity Award will govern and control.

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 at the Company through the potentially disruptive conditions that may exist around the time of a change of control of the Company, while not unduly rewarding executive officers for a termination of their employment.

The change in control plan does not provide for the gross-up of any excise taxes imposed by section 4999 of the Internal Revenue Code (the "Code"). If any of the severance benefits payable under the change in control plan would constitute a "parachute payment" within the meaning of section 280G of the Code, subject to the excise tax imposed by section 4999 of the Code, the change in control plan provides for a best after-tax analysis with respect to such payments, under which the executive will receive whichever of the following two alternative forms of payment would result in the executive's receipt, on an after-tax basis, of the greater amount of the transaction payment notwithstanding that all or some portion of the transaction payment may be subject to the excise tax: (i) payment in full of the entire amount of the transaction payment, or (ii) payment of only a part of the transaction payment so that the executive receives the largest payment possible without the imposition of the excise tax.

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 (50% match of up to the first 6% of eligible compensation).

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

In hiring new executive officers who agree to relocate to Northern California, we have agreed in certain instances to pay relocation and travel expenses, including housing and rental car expenses. 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 executive officers located near our headquarters in Emeryville, California, we must be willing to offer to pay an agreed upon amount of relocation costs, as necessary.

Additional Compensation Information

Other Compensation Practices and Policies

The following additional compensation practices and policies applied to our executive officers in 2021:

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

As in prior years, in November 2021, our Board and the LDICC, respectively, ratified our existing policy regarding equity award grant dates in an effort to ensure the integrity of the equity award granting process. The original policy was adopted in March 2011. Under the policy, equity awards are generally granted on the following schedule:

- For equity awards to ongoing executive officers, the grant date is the first business day of the week following the week in which the award is approved; and
- For equity awards to newly hired executive officers, the grant date is 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.

Accounting and Tax Considerations

Under ASC 718, the Company is required to estimate the fair value of each equity award (including stock options and RSUs) and record the compensation expense over the underlying vesting period each award. We record share-based compensation expense on an ongoing basis according to ASC 718. The LDICC has considered, and may in the future consider, the grant of performance-based or other types of stock awards to executive officers in lieu of or in addition to stock option and time-based RSU grants in light of the accounting impact of ASC 718 and other considerations.

Generally, Section 162(m) of the Code 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, chief financial officer and up to three other executive officers whose compensation is required to be disclosed to their stockholders under the Exchange Act 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 LDICC has not adopted a formal policy regarding tax deductibility of the compensation paid to our executive officers, tax deductibility under Section 162(m) is one factor that is considered in its compensation deliberations.

The LDICC 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 LDICC 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).

Compensation Recovery Policy. Other than with respect to the CEO PSU Award, CFO PSU Award, and COO PSU Award, 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 LDICC 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.

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 the 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/Pledging Prohibition. We have adopted an Insider Trading Policy that, among other things, prohibits our employees, officers and the non-employee members of our Board from trading in our securities while in possession of material, non-public information. In addition, under our Insider Trading Policy, our employees, officers and the non-employee members of our Board may not (1) engage in transactions involving options or other derivative securities on the Company's securities, such as puts and calls, whether on an exchange or in any other market (however, they may accept and exercise compensatory equity grants issued by the Company); (2) engage in hedging or monetization transactions involving the Company's securities; (3) use or pledge Company securities as collateral in a margin account or as collateral for a loan; or (4) engage in short sales of the Company's securities, including short sales "against the box."

Leadership, Development, Inclusion, and Compensation Committee Report*

The LDICC has reviewed and discussed with management the "Compensation Discussion and Analysis" contained in this Proxy Statement. Based on this review and discussion, the LDICC recommended to the Board that the Compensation Discussion and Analysis be included in this Proxy Statement.

Amyris, Inc. Leadership, Development, Inclusion, and Compensation Committee of the Board

James McCann (Chair)
Steven Mills
Ryan Panchadsaram
Julie Spencer Washington

** 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, Inc. 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.*

Summary Compensation Table

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Award ($)[1]	Option Award ($)[1]	Non-Equity Incentive Plan Compensation ($)[2]	All Other Compensation ($)	Total ($)
John Melo, CEO	2021	712,500[3]	532,650[4]	70,564,997[5]	—	696,480	—	72,506,627
	2020	646,667[3]	—	—	—	698,246	—	1,344,913
	2019	630,000	185,320[4]	144,424	11,680	333,613[6]	1,261[7]	1,306,298
Han Kieftenbeld, CFO	2021	450,000[8]	182,248[9]	4,767,250[10]	—	434,060	8,880[11]	5,842,438
	2020	332,500	125,000[12]	745,050	187,104	359,666	675[11]	1,749,995
Eduardo Alvarez, COO	2021	500,000	164,400[13]	8,034,000[14]	—	577,950	1,440[16]	9,277,790
	2020	500,000	—	579,000	145,555	458,235	1,440[16]	1,684,320
	2019	416,667[15]	—	—	—	245,825	2,701[7][16]	665,192
Nicole Kelsey, CLO	2021	413,750[17]	42,778[18]	669,500	268,075	158,187	8,700[11]	1,560,990
	2020	395,000	—	115,800	72,778	139,405	7,125[11]	730,108
	2019	395,000	—	—	—	98,513	5,600[11]	499,113

(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. A Monte Carlo simulation is used to calculate the fair value of PSUs with service and market-based vesting conditions, as applicable. The assumptions made in the valuation of the awards are discussed in Note 13, "Stock-based Compensation" of "Notes to Consolidated Financial Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021. These amounts do not correspond to the actual value that may be recognized by our named executive officers.

(2) Payments under our 2021 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) Mr. Melo's annual base salary was increased from $650,000 to $750,000 effective May 16, 2021 and from $630,000 to $650,000 effective March 1, 2020.

(4) Consists of (a) a $400,000 cash bonus, which was approved by the LDICC in May 2021 to be granted to Mr. Melo in recognition of his extraordinary efforts in negotiating, structuring and consummating certain transformative transactions for the Company in the first quarter of 2021, including the sale of exclusive rights to the Company's flavor and fragrance product portfolio DSM Nutritional Products Ltd. (the "May 2021 CEO Award") and (b) the amount approved by the LDICC, in its discretion, which exceeded the applicable funded level for each of the CEO's quarterly bonus payments in the second, third and fourth quarters of 2021. See "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Cash Bonuses" above for more information.

(5) Consists of (a) an RSU award with a grant date value of $2,000,000 (vesting immediately) pursuant to the May 2021 CEO Award and (b) the CEO PSU Award with a grant date value of $68,565,000, which was approved by our stockholders at a special meeting of stockholders on July 26, 2021. For more information regarding the CEO PSU Award and vesting terms, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award."

(6) In March 2020, the LDICC 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.

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

(8) Mr. Kieftenbeld was appointed our CFO effective March 16, 2020, and also appointed Chief Administration Officer effective July 1, 2020. His annual base salary for 2020 was $420,000, which was increased from $420,000 to $460,000 effective April 1, 2021.

(9) Consists of (a) a $100,000 cash bonus, which was approved by the LDICC in May 2021 to be granted to Mr. Kieftenbeld in recognition of his extraordinary efforts in procuring and negotiating a licensing transaction with Ingredion Incorporated (the "May 2021 CFO Award") and (b) the amount approved by the LDICC, in its discretion, which exceeded the applicable funded level for each of the CFO's quarterly bonus payments in the second, third and fourth quarters of 2021. See "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Cash Bonuses" above for more information.

(10) Consists of (a) a grant to Mr. Kieftenbeld of 100,000 RSUs, vesting in three equal annual installments pursuant to the May 2021 CFO Award, and (b) the CFO PSU Award. For more information regarding the CFO PSU Award with a grant date value of $3,428,450, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award."

(11) Includes Section 401(k) plan employer matching contribution and gross up for taxes on taxable benefit received.

(12) In 2020 Mr. Kieftenbeld received a sign-on bonus paid in connection with his appointment as CFO.

(13) Consists of (a) a $75,000 cash bonus which was approved by the LDICC in May 2021 to be granted to Mr. Alvarez in recognition of his extraordinary efforts in assisting in the negotiation and closing of the transaction with Ingredion Incorporated and (b) the amount approved

PROXY

by the LDICC, in its discretion, which exceeded the applicable funded level for each of the COO's quarterly bonus payments in the second, third and fourth quarters of 2021. See "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Cash Bonuses" above for more information.

(14) Consists of the COO PSU Award. For more information regarding the COO PSU Award, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—COO PSU Award."

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

(16) Represents a stipend for waiving medical benefits.

(17) Ms. Kelsey's base salary was increased from $395,000 to $425,000, effective May 16, 2021.

(18) Consists of (a) a cash bonus of $5,000 which was approved by the LDICC in December 2021 to be granted to Ms. Kelsey in recognition of her efforts in resolving a government investigation and (b) the amount approved by the LDICC, in its discretion, which exceeded the applicable funded level for each of the CLO's quarterly bonus payments in the second, third and fourth quarters of 2021. See "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Cash Bonuses" above for more information.

Narrative Disclosure to Summary Compensation Table

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 2021 are described above under "Executive Compensation—Compensation Discussion and Analysis." 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.

Grants of Plan-Based Awards in 2021

The following table sets forth information regarding grants of compensation in the form of plan- based awards made during 2021 to our named executive officers.

	Grant Date[(1)]	Approval Date of Grant[(1)]	Estimated Possible Payouts Under Non-Equity Incentive Plan Awards			All Other Stock Awards: Number of Shares of Stock or Units (#)[(3)]	All Other Option Awards: Number of Securities Underlying Options (#)[(4)]	Exercise or Base Price of Option Awards ($/Sh)[(5)]	Grant Date Fair Value of Stock and Option Awards ($)[(6)]
Name			Threshold ($)[(2)]	Target ($)[(2)]	Maximum ($)[(2)]				
John Melo	—	—	365,000	730,000	1,460,000	—	—	—	—
	5/24/21	5/18/21	—	—	—	149,365[(7)]	—	—	1,999,997
	8/2/21	7/26/21	—	—	—	6,000,000[(8)]	—	—	68,565,000
Han Kieftenbeld	—	—	223,850	447,700	895,400	—	—	—	—
	5/24/21	5/18/21	—	—	—	100,000[(9)]	—	—	1,339,000
	8/2/21	7/26/21	—	—	—	300,000[(8)]	—	—	3,428,250
Eduardo Alvarez	—	—	250,000	500,000	1,000,000	—	—	—	—
	5/24/21	5/18/21	—	—	—	600,000[(8)]	—	—	8,034,000
Nicole Kelsey	—	—	104,750	209,500	419,000	—	—	—	—
	5/24/21	5/18/21	—	—	—	50,000[(9)]	—	—	669,500
	5/24/21	5/18/21	—	—	—	—	25,000[(10)]	13.39	268,075

(1) Our Board has adopted a policy regarding the grant date of equity awards under which the grant date of equity awards generally would be, for awards to ongoing employees, the first business day of the week following the week in which the award was approved by the LDICC or, for new hire awards, the first business day of the week following the later of the week in which the award is approved by the LDICC or the week in which the new hire commences his or her employment. The CEO PSU Award listed in the table above was approved by the LDICC and the Board in May 2021 and approved by our stockholders at our 2021 special meeting of stockholders held on July 26, 2021. Following such stockholder approval and in accordance with our policy regarding equity award grant dates, the CEO PSU Award and CFO PSU Award were granted on August 2, 2021, the first business day of the week following the week in which such awards were approved.

(2) In May 2021, the LDICC approved our 2021 cash bonus plan, a non-equity incentive plan, under which the eligible amounts reported under "Estimated Possible Payouts Under Non-Equity Incentive Plan Awards" were based. The terms of the plan and actual amounts paid out under the plan are discussed above in this Proxy Statement under "Executive Compensation—2021 Compensation—Cash Bonuses" and the amounts paid out under the plan are included in the "Non-Equity Incentive Plan Compensation" column of the "Summary Compensation Table" above. The estimated possible payouts as of December 31, 2021 shown in this table reflect the potential incentive awards that could have been paid for the four quarters and annual period of 2021 at the threshold, target and maximum levels for each individual.

(3) Amounts in this column represent RSU awards granted under the 2020 EIP.

(4) Amounts in this column represent stock option awards granted under the 2020 EIP.

(5) The exercise price per share of the stock options listed in the table above is the closing price of our common stock on Nasdaq on the Grant Date, which represents the fair value of our common stock on the same date. RSU awards do not have any exercise price.

(6) Reflects the grant date fair value of each award 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 13, "Stock-based Compensation" of "Notes to Consolidated Financial Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021.

(7) These RSUs vested in full on May 31, 2021.

(8) These RSUs are subject to performance-based vesting conditions subject to continued service through each vesting date. For more information regarding these RSUs, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award—COO PSU Award." Such RSUs 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."

(9) These RSUs vest in three equal annual installments, with the first one-third of the units vesting on June 1, 2021, subject to continued service through each vesting date. Such restricted stock units are 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."

(10) These stock options have a four-year vesting schedule, with 25% of the shares subject to the stock options vesting on May 24, 2022 with the remainder vesting over the following three years in equal annual installments, subject to continued service through each vesting date. Such stock options are subject to acceleration of vesting upon termination of employment following a change of control, as further described below under "Potential Payments upon Termination and upon Termination Following a Change in Control."

Outstanding Equity Awards

The following table sets forth information regarding outstanding equity awards held by our named executive officers as of December 31, 2021.

	Option Awards				Stock Awards	
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#)[1] Unexercisable	Option Exercise Price ($/Sh)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)[2]
John Melo	6,666	—	57.90	4/9/2022	—	—
	24,066	—	43.05	6/3/2023	—	—
	20,000	—	52.65	5/5/2024	—	—
	28,333	—	29.40	6/8/2025	—	—
	6,000	—	24.45	11/9/2025	—	—
	28,333	—	8.85	5/16/2026	—	—
	20,000	—	3.16	6/12/2027	—	—
	4,161	—	3.74	1/14/2029		
	—	—	—	—	175,000[3]	946,750
	—	—	—	—	6,000,000[4]	32,460,000
Han Kieftenbeld	11,953	10,547[5]	2.46	3/30/2030	33,750[6]	182,588
	15,625	34,375[7]	3.86	8/10/2030	100,000[8]	541,000
	—	—	—	—	100,000[9]	541,000
	—	—	—	—	300,000[4]	1,623,000
Eduardo Alvarez	30,000	—	2.89	10/23/2027	—	—
	15,625	34,375[7]	3.86	8/10/2030	100,000[8]	541,000
	—	—	—	—	600,000[4]	3,246,000
Nicole Kelsey	9,000	—	2.49	8/14/2027	—	—
	44,791	5,209[10]	5.08	5/29/2028	—	—
	7.812	17,188[7]	3.86	8/10/2030	20,000[8]	108,200
	—	25,000[11]	13.39	5/24/2031	50,000[9]	270,500

(1) In addition to the specific vesting schedule for each award, each unvested award is subject to the general terms of the 2010 EIP or 2020 EIP, as applicable, including the potential for future vesting 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."

(2) The market values of the RSU awards that have not vested are calculated by multiplying the number of shares underlying the RSU awards shown in the table by $5.41, the closing price of our ordinary shares on December 31, 2021.

(3) RSUs awarded on March 30, 2020 vest in equal annual installments over four years with the first installment vesting on July 1, 2019.

(4) These RSUs are subject to performance-based vesting conditions subject to continued service through each vesting date. For more information regarding these RSUs, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award" and "COO PSU Award." Such RSUs 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."

(5) The unexercisable shares subject to this stock option award as of December 31, 2021 will vest monthly from January 1, 2022 to March 16, 2023.

(6) RSUs awarded on March 30, 2020 vest in equal annual installments over two years with the first installment vesting on June 1, 2021.

(7) The unexercisable shares subject to this stock option award as of December 31, 2021 will vest monthly from January 1, 2022 to September 1, 2024.

(8) RSUs awarded on August 10, 2020 vest in equal annual installments over three years with the first installment vesting on September 1, 2021.

(9) RSUs awarded on May 24, 2021 vest in equal annual installments over three years with the first installment vesting on June 1, 2022.
(10) The unexercisable shares subject to this stock option award as of December 31, 2021 will vest monthly from January 1, 2021 to May 1, 2022.
(11) The unexercisable shares subject to this stock option award as of December 31, 2021 will vest as to 25% of the shares on May 24, 2022, with the remainder vesting in equal monthly installments over the following three years.

Option Exercises and Stock Vested During 2021

The following table sets forth information regarding the exercise of options and vesting of RSUs held by our named executive officers during 2021.

	Option Awards		Stock Awards	
Name	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise ($)	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting ($)[1]
John Melo	—	—	324,365	5,098,714
Han Kieftenbeld	—	—	83,750	1,234,063
Eduardo Alvarez	—	—	50,000	743,000
Nicole Kelsey	—	—	43,333	633,929

(1) Value realized on vesting is calculated by multiplying the number of units vesting by the closing price of our common stock on Nasdaq on the date of vesting (or most recent closing price in the event the date of vesting falls on a non-trading day).

PROXY

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.

Non-Qualified Deferred Compensation

None of our named executive officers participates in, or has account balances in, a traditional non-qualified deferred compensation plan or any other deferred compensation plan maintained by us.

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

In November 2013, the LDICC 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. As in prior years, in March 2021 the LDICC reviewed the terms of the Severance Plan and elected to allow it to automatically renew. The LDICC 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 under 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, CFO and COO are entitled to the rights and benefits provided for in their respective 2021 Performance Equity Awards 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 respective 2021 Performance Equity Awards and the

Severance Plan relating to accelerated vesting of equity awards, the terms of each respective 2021 Performance Equity Award 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 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.

For a description of the treatment of the CEO PSU Award, CFO PSU Award and COO PSU Award upon change of control and/or subsequent protected termination, please see "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards."

The following table summarizes the potential amounts payable to each of our named executive officers under the Severance Plan upon an Involuntary Termination (i) other than in connection with a change of control of the company and (ii) in connection with a change of control of the company, assuming in each case, that such Involuntary Termination occurred on December 31, 2021.

	Involuntary Termination Not in Connection with a Change of Control			Involuntary Termination in Connection with a Change of Control		
Name	Base Salary ($)	Continuing Health Benefits ($)	Value of Accelerated Options or Shares ($)(1)	Base Salary ($)	Continuing Health Benefits ($)	Value of Accelerated Options or Shares ($)(2)
John Melo	1,125,000	53,235	—	1,500,000	53,235	946,750
Han Kieftenbeld	460,000	25,149	—	690,000	37,723	1,348,982
Eduardo Alvarez(3)	500,000	—	—	750,000	—	3,840,281
Nicole Kelsey	425,000	20,681	—	637,500	31,021	407,060

(1) Accelerated vesting is only applicable in the event of an Involuntary Termination in connection with a change of control.

(2) With respect to outstanding options as of December 31, 2021, calculated by multiplying the number of shares underlying unvested stock options that would vest as a result of an Involuntary Termination following a change of control by the excess of $5.41, the closing price of our common stock on Nasdaq on December 31, 2021, over the exercise price of the stock options. Unvested stock options with exercise prices higher than $5.41 are excluded from the calculation. With respect to outstanding restricted stock units as of December 31, 2021, calculated by multiplying the number of outstanding unvested restricted stock units that would vest as a result of an Involuntary Termination following a change of control by $5.41, the closing price of our common stock on Nasdaq on December 31, 2021. Assumes that the per share price common stock price received by the shareholders in the change of control is measured to be below all Stock Price Milestones of the CEO PSU Award and the CFO PSU Award. For a complete discussion on how the CEO PSU Award and the CFO PSU Award are treated upon a change of control, see "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award."

(3) Mr. Alvarez's COO PSU Award agreement provides that if the Company experiences a change of control during the COO Performance Period, the COO Performance Metric for any COO Tranche that has not yet been achieved will be deemed achieved effective as of immediately prior to the closing of the change of control. The resulting "achieved" PSUs (the "COO COC RSUs") will be unvested on the closing date and will vest on December 31, 2022, subject to Mr. Alvarez's continuous Service on the closing date and on such vesting date, with such COO COC RSUs accelerating in full upon a termination without cause or resignation of good reason, as provided in the Severance Plan. For a complete discussion on how the COO PSU Award is treated upon a change of control, see ""Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—COO PSU Award."

Pay Ratio Disclosure

Under SEC rules, we are required to calculate and disclose the median of the annual total compensation of all our employees (other than our CEO), the annual total compensation of our CEO and the ratio of the median of the annual total compensation of all our employees compared to the annual total compensation of our CEO, Mr. Melo (our "CEO pay ratio").

For 2021:

- The median of the annual total compensation of all our employees (other than our CEO) was $117,489; and

- the annual total compensation of Mr. Melo, as reported in the "2021 Summary Compensation Table" above, was $72,506,627.

Thus, for 2021, the ratio of our CEO's annual total compensation to the median of the annual total compensation of all our employees was approximately 617 to 1. This ratio is a reasonable estimate calculated in a manner consistent with Item 402(u) of Regulation S-K.

In determining the median of the annual total compensation of all employees of the Company (other than Mr. Melo), we prepared a list of all employees as of December 31, 2021. We then calculated the annual compensation (base salary, actual and target bonus, and grant date value of equity awards) of our employees as of that date for the 12-month period from January 1, 2021 through December 31, 2021. We did not include any contractors or other non-employee workers in our employee population or any employees of our subsidiaries acquired in M&A transactions during calendar year 2021 (approximately 55 employees). Salaries and wages were annualized for permanent employees who were not employed for the full year of 2021. We used exchange rates in effect as of December 31, 2021 to convert the base salaries and other compensation amounts of our non-U.S. employees to U.S. dollars. We did not make any cost-of-living adjustments.

Using this approach, we selected the individual at the median of our employee population. We then calculated the annual total compensation for this individual using the same methodology we use for our NEOs as set forth in the "2021 Summary Compensation Table" above. Our CEO's 2021 compensation included (i) a one-time $400,000 cash bonus and one-time RSU award with a grant date value of $2 million (vesting immediately), in each case recognizing Mr. Melo's extraordinary efforts in negotiating, structuring and consummating certain transformative transactions for the Company in the first quarter of 2021, and (ii) the CEO PSU Award with a grant date fair value of $68.6 million. For more information regarding the CEO compensation, please see above under "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation".

We are providing a supplemental ratio that compares Mr. Melo's total 2021 compensation, excluding the CEO PSU Award, with a grant date fair value of $68.6 million (see "Executive Compensation—Compensation Discussion and Analysis—2021 Compensation—Equity Awards—2021 Performance Equity Awards—CEO PSU Award and CFO PSU Award" above for additional information), to the annual total compensation of the median employee to facilitate a better understanding of our CEO's ongoing annual total compensation and better comparability. The resulting supplemental CEO pay ratio is approximately 34 to 1.

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.

Director Compensation

Director Compensation for 2021

During the fiscal year ended December 31, 2021, our non-employee directors who served during 2021 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 ($)
John Doerr[3]	14,750	232,515	—	—	247,265
Geoffrey Duyk	51,181	107,060	—	—	158,241
Philip Eykerman[4]	43,681	107,060	—	—	150,741
Christoph Goppelsroeder[5]	10,000	—	—	—	10,000
Frank Kung[6]	43,681	107,060	—	—	150,741
James McCann	54,863	107,060	—	—	161,923
Steven Mills	75,368	107,060	—	—	182,428
Ryan Panchadsaram[7]	24,354	107,060	—	—	131,414
Carole Piwnica[8]	22,254	—	—	—	22,254
Lisa Qi[9]	45,338	146,884	48,238	—	240,460
Julie Spencer Washington	49,049	107,060	—	—	156,109
Patrick Yang[10]	30,434	—	—	—	30,434

(1) Reflects Board, Committee Chair and Committee member retainer fees earned during 2021.

(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 13, "Stock-based Compensation" of "Notes to Consolidated Financial Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021. These amounts do not correspond to the actual value that may be recognized by our non-employee directors. In August 2021, each of our then non-employee directors received an annual award under the 2020 EIP of 7,409 RSUs in accordance with our non-employee director compensation program described below.

(3) In August 2021, the LDICC approved the payment of Mr. Doerr's annual cash retainers from January 2019 through September 2021, which were previously irrevocably waived in full by him, in the form of RSUs vesting on September 30, 2021 and calculated based on the 30-day VWAP of our common stock as of July 31, 2021. The grant date fair value for this award of 8,682 RSUs, as calculated under FASB ASC Topic 718, is $125,455.

(4) All cash compensation earned by Mr. Eykerman during 2021 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.

(5) Mr. Goppelsroeder resigned from the Board as of April 1, 2021. All cash compensation earned by him during 2021 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 declined each equity award granted to him pursuant to our non-employee director compensation program.

(6) All cash compensation earned by Dr. Kung during 2021 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.

(7) Mr. Panchadsaram was appointed to our Board in August 2021 and the fees earned by him in 2021 represent retainer fees earned for the portions of 2021 that he served on our Board.

(8) Ms. Piwnica resigned from the Board as of May 28, 2021.

(9) In August 2021, the LDICC approved the issuance to Ms. Qi of her initial equity awards in 2019 and her 2020 annual equity awards which were previously irrevocably waived in full by her. Ms. Qi received an award under the 2020 EIP of an option to purchase 4,216 shares of our common stock and 2,756 RSUs. This award was contemplated by our non-employee director compensation program in effect during

2019 and 2020 (described in "Narrative Disclosure to Director Compensation Tables" below). The stock option and RSU awards vested in full on September 30, 2021. The grant date fair value for these awards, as calculated under FASB ASC Topic 718, is as follows:

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)
Lisa Qi	8/23/2021	—	4,216	14.45	—	48,238
Lisa Qi	8/23/2021	2,756	—	—	39,824	—

(10) Mr. Yang resigned from the Board as of September 1, 2021.
(11) As of December 31, 2021, the non-employee directors who served during 2021 held the following outstanding equity awards:

Name	Outstanding Options (Shares)	Outstanding Stock Awards (Units)
John Doerr	15,464	7,409
Geoffrey Duyk	11,598	7,409
Philip Eykerman	15,131	7,409
Christoph Goppelsroeder	—	—
Frank Kung	13,398	7,409
James McCann	7,682	7,409
Steven Mills	10,398	7,409
Ryan Panchadsaram	—	7,409
Carole Piwnica	—	—
Lisa Qi	4,216	7,409
Julie Spencer Washington	3,466	7,409
Patrick Yang	—	—

Narrative Disclosure to Director Compensation Tables

Under our current non-employee director compensation program, as amended by the Board and effective in August 2021, and 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 $50,000 and an annual equity award of RSUs with a value of $115,000, 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 Chair of the Audit Committee receives an additional annual cash retainer of $20,000.
- The Chair of the LDICC receives an additional annual cash retainer of $13,000.
- The Chair of the NGC receives an additional annual cash retainer of $9,000.
- Audit Committee, LDICC and NGC members other than the Chair receive an additional annual cash retainer of $7,500, $6,000 and $4,500, respectively.

In general, all the retainers described above are paid quarterly in arrears. Starting in fiscal year 2022, directors may elect to receive RSUs in lieu of their cash retainers ("retainer RSUs"). Directors must make this election annually and such election is binding on the full amount of the retainer for the applicable four-quarter period. 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 and unvested retainer RSUs are cancelled upon a director departure. Non-employee directors are also eligible for reimbursement of their expenses incurred in attending Board and Committee meetings.

Pursuant to our 2020 Equity Incentive Plan, a non-employee director may receive compensation (including cash and equity awards) representing no more than $500,000 total value in any calendar year.

Compensation Committee Interlocks and Insider Participation

None of the members of our LDICC was at any time our officer or employee during 2021. None of our executive officers serve, or in the past fiscal year served, as a member of the board of directors or the compensation committee of any entity that has one or more of its executive officers serving on our Board or LDICC.

Transactions with Related Persons

Certain Transactions

The following is a description of each transaction since the beginning of 2021, 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; 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 Foris

Loan and Security Agreement Amendment. On November 9, 2021, the Company, certain of the Company's subsidiaries (the "Subsidiary Guarantors") and Foris Ventures, LLC ("Foris"), an entity affiliated with director John Doerr, a current stockholder and beneficial owner of greater than five percent of our outstanding common stock, and director Ryan Panchadsaram, entered into Amendment No. 2 to the Amended and Restated Loan and Security Agreement, dated October 28, 2019 (as amended, the "LSA"), by and among the Company, the Subsidiary Guarantors and Foris, under which approximately $50.0 million was outstanding as of December 31, 2021, pursuant to which, among other things, (i) the definition of permitted indebtedness under the LSA was amended to permit the issuance of certain senior convertible notes due 2026 issued on November 15, 2021 (the "Convertible Notes"); and (ii) the definitions of permitted investment and permitted transfer under the LSA were amended to permit certain capped call transactions in connection with the issuance of the Convertible Notes.

Credit Agreement Repayment and Termination. On November 15, 2021, with proceeds from the Convertible Notes offering, the Company paid Foris an aggregate of $5.9 million representing all principal and interest due under the Credit Agreement dated as of April 29, 2020, by and between the Company and Foris, thereby terminating such agreement.

Warrants Exercises. On July 31, 2021, the Company and Foris entered into an Exercise Notice and Agreement with respect to a right to purchase shares of the Company's common stock issued to Foris by the Company on January 31, 2020, as amended, whereby Foris exercised the right to purchase 3,778,230 shares of the Company's common stock at an exercise price of $2.87 per share and the Company agreed to receive the exercise price payment and issue the corresponding shares once Foris obtained clearance under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 as amended, which was obtained on September 7, 2021. On September 9, 2021, the Company received approximately $10.8 million representing the exercise price and issued 3,778,230 shares of its Company's common stock to Foris.

Transactions with DSM

Performance Agreement. On December 28, 2017, the Company and DSM Nutritional Products AG (together with its affiliates, "DSM"), a commercial partner and affiliate of an owner of greater than five percent of the Company's outstanding common stock, which has the right to designate up to two members of our Board of Directors, entered into a Performance Agreement (as amended, the "Performance Agreement") pursuant to which the Company provides certain research and development services to DSM relating to the development of the technology underlying the farnesene-related products in exchange for related funding, including certain bonus payments in the event that specific performance metrics are achieved. If the Company did not meet the established metrics under the Performance Agreement, the Company would be required to pay $1.9 million to DSM. In the first quarter of 2021, the Company and DSM determined the performance metrics would not be reasonably achieved without the Company providing further research and development services and concluded the Performance Agreement and related activities should be terminated and, as a result, the Company paid DSM $1.9 million in 2021.

Asset Purchase Agreement and License Agreement. On March 31, 2021, the Company and DSM entered into (i) an Asset Purchase Agreement pursuant to which DSM acquired exclusive rights to the Company's Flavor and Fragrance ("F&F") product portfolio except for the intellectual property related to the F&F business, (ii) a License and Drawing Rights Agreement pursuant to which the Company granted DSM an exclusive, perpetual, royalty-free, world-wide, and irrevocable license covering the F&F business intellectual property, and (iii) a Supply Agreement, pursuant to which the Company will manufacture certain F&F ingredients to DSM for a 15-year term, in exchange for non-refundable upfront consideration totaling $150.0 million and up to $235.0 million of contingent consideration if and when certain commercial milestones are achieved in each of the calendar years 2022 through 2024. DSM also acquired the Company's F&F finished goods inventory on-hand, unbilled accounts receivables and billed accounts receivable that were uncollected at closing. Effective November 10, 2021, the Company and DSM amended the Supply Agreement to temporarily reduce the manufacturing fee of certain molecules as an incentive to stimulate more rapid adoption of such products by the market.

Developer License Agreement. In September 2021, the Company granted DSM a three-year license to perform research and development to improve and enhance certain technology underlying the Company's farnesene-related yeast strain in exchange for a $6.0 million license fee.

Credit Agreement Repayment and Termination. On March 1, 2021 and March 31, 2021, the Company and DSM entered into certain amendments to (a) the $25 million note issued by the Company to DSM on December 28, 2017, maturing on December 31, 2021 and accruing interest at 10% per annum (the "2017 Note") and (b) the $8 million aggregate notes issued by the Company to DSM on September 17, 2019, September 19, 2019, and September 23, 2019 maturing on August 7, 2022, accruing interest at 12.5% per annum, and secured by a first-priority lien on certain Company intellectual property licensed to DSM (collectively, the "2019 Notes"). Such amendments provided for, (i) the prepayment of the 2019 Notes, (ii) the partial $15 million prepayment of the 2017 Note, and (iii) extension of the maturity date of the 2017 Note from December 31, 2021 to April 15, 2022 with respect to its remaining $10 million principal balance, in exchange for a $2.5 million prepayment fee. On March 31, 2021, the Company paid $23 million to DSM in full repayment of the 2019 Notes and partial repayment of the 2017 Note. On November 15, 2021, with proceeds from the Convertible Notes offering, the Company paid DSM an aggregate of $10.1 million representing all remaining principal and interest due under the 2019 Notes.

Warrant Exercises. On January 19, 2021, DSM provided to the Company notices of cashless exercise to purchase an aggregate 7,936,232 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to certain cashless common stock purchase warrants issued by the Company on May 11, 2017 and August 7, 2017 and, in connection therewith the Company issued to DSM a total of 6,056,944 shares of its common stock.

On April 8, 2021, DSM provided to the Company notices of cash exercise to purchase an aggregate 6,057,966 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to certain anti-dilution common stock purchase warrants issued by the Company on May 11, 2017 and August 7, 2017 and, in connection therewith the Company received approximately $5 thousand.

Secondary Offering. On April 8, 2021, the Company entered into an underwriting agreement with J.P. Morgan Securities LLC and Cowen and Company, LLC, as underwriters, and with DSM and Vivo (as defined below), as selling stockholders, pursuant to which, among other things, DSM agreed to sell an 7,322,655 shares of the Company's common stock and granted the underwriters a 30-day option to purchase up to an additional 1,098,398 shares of common stock from the selling stockholders, which was exercised in full. The Company did not receive any proceeds from the sale of common stock in the secondary offering by the selling stockholders.

Transactions with Vivo

Warrants Exercises. On April 6, 2021, affiliates of Vivo Capital LLC (collectively, "Vivo"), an entity affiliated with the Company's director Frank Kung and which owned greater than five percent of the Company's outstanding common stock during 2021 and has the right to designate one member of the Company's Board of Directors, provided to the Company notices of cash exercise to purchase an aggregate 1,212,787 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to certain Common Stock Purchase Warrants issued by the Company on April 29, 2019 and, in connection therewith the Company received approximately $5.8 million representing the exercise payment from Vivo.

Secondary Offering. On April 8, 2021, the Company entered into an underwriting agreement with J.P. Morgan Securities LLC and Cowen and Company, LLC, as underwriters, and with DSM and Vivo, as selling stockholders, pursuant to which, among other things, Vivo agreed to sell an aggregate 4,068,142 shares of the Company's common stock and granted the underwriters a 30-day option to purchase up to an additional 610,221 shares of common stock from the selling stockholders, which was exercised in full. The Company did not receive any proceeds from the sale of common stock in the secondary offering by the selling stockholders.

Warrant Exercises by Fidelity

On January 7, 2021, affiliates of FMR LLC ("Fidelity"), an entity which then owned greater than five percent of our outstanding common stock, provided to the Company notices of cash exercise to purchase an aggregate 2,782,258 shares of the Company's common stock at an exercise price of $2.87 per share, pursuant to certain Common Stock Purchase Rights issued by the Company to Fidelity on January 31, 2020 and, in connection therewith, the Company received $10.0 million representing the exercise payment from Fidelity.

Compensation Arrangements

Stephanie Kung, the daughter of director Frank Kung, is a non-executive employee of the Company and received employment compensation plus benefits in excess of $120,000 in 2021, and she is expected to receive employment compensation plus benefits in excess of $120,000 in 2022.

On October 4, 2021, Sofia Melo, the daughter of John Melo, the Company's President and Chief Executive Officer and a member of the Board, was hired as an executive producer reporting to the Company's Chief Brand Activist, with total annual target cash and equity compensation plus benefits in excess of $120,000.

Indemnification Arrangements

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 Delaware General Corporation Law. 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 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.

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 hold registration rights pursuant to the following:

- Letter agreement, dated July 29, 2015, by and among us and certain investors
- Securities Purchase Agreement, dated May 8, 2017, by and among us and certain investors
- Securities Purchase Agreement, dated August 2, 2017, by and between us and DSM International B.V.
- Stockholder Agreement, dated August 3, 2017, by and between us and affiliates of Vivo Capital LLC
- Amended and Restated Stockholder Agreement, dated August 7, 2017, by and between us and DSM International B.V.
- Securities Purchase Agreements, dated January 31, 2020, by and between us and the investor named therein, including Foris Ventures, LLC.
- Security Purchase Agreements, dated June 1, 2020 and June 4, 2020, by and between us and the investors named therein, including Foris Ventures, LLC, and Vivo Capital LLC.
- Securities Purchase Agreement, dated May 7, 2021, with Upland1,LLC and the other parties thereto.
- Share Purchase Agreement, dated August 11, 2021, with MG Empower Ltd. and the other parties thereto.
- Agreement and Plan of Merger and Reorganization and Note Purchase Agreement, each dated August 11, 2021, by and among the Company, OLIKA Inc. and the other parties thereto.
- Share Purchase Agreement and Option Cancellation Agreements, each dated as of August 31, 2021, by and among the Company, Beauty Labs International Limited and the selling stockholders party thereto.
- Agreement and Plan of Merger dated January 26, 2022, by and among the Company, certain of its subsidiaries, No Planet B Holdings, Inc. and its stockholders.
- Asset Purchase Agreement dated March 9, 2022, by and among the Company, certain of its subsidiaries, and MenoLabs, LLC.

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. 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.

Annual Meeting Information

Information Regarding Solicitation and Voting

In accordance with rules and regulations adopted by 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 13, 2022 to most of our stockholders who owned our common stock at the close of business on March 30, 2022. 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 2022 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.

Voting by Internet. You may submit your proxy over the Internet 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 telephone. You may submit your proxy 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.

Questions and Answers About the Annual Meeting and Voting

Who can vote at the meeting?

The Board set March 30, 2022, as the record date for the meeting. If you owned shares of our common stock as of the close of business on March 30, 2022, 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 March 30, 2022, there were 317,975,269 shares of our common stock outstanding and entitled to vote (as reflected in the records of our stock transfer agent).

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 as well as at the virtual meeting.

How can I attend and vote at the meeting?

In consideration of public health concerns relating to COVID-19, the Annual Meeting will be held virtually; you will not be able to attend the Annual Meeting in person. 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 virtually on Friday, May 27, 2022 at 2:00 p.m. Pacific Time.

To attend the meeting, you must pre-register no later than May 27, 2022, 2:00 p.m. Pacific Time by visiting www.proxydocs.com/AMRS and using your unique control number provided in your Notice, proxy card or voting instruction form. Upon completing your pre-registration, you will receive instructions via email, including your unique weblink to access the meeting. Upon accessing the meeting, you will find a voting option on the landing page. If you have submitted your votes prior to the meeting and wish to change your vote, you may do when you access the virtual meeting.

Whether or not you plan to attend the Annual Meeting, we urge you to vote and submit your proxy in advance of the meeting. For information on how to vote prior to the Annual Meeting, see *"How can I vote my shares without attending the Annual Meeting?"*

How can I ask questions during the meeting?

During the pre-registration process, you will be able to submit questions for the question and answer session that will immediately follow the adjournment of the Annual Meeting. We will answer pre-submitted questions that comply with the meeting rules of conduct, subject to time constraints.

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 according to the instructions above.

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 2022 Annual Meeting, and instructions as to how your shares can be voted may be found in the Notice. 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.

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.

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.

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 is a quorum?

A quorum is necessary to hold a valid 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.

What proposals will be voted on at the meeting?

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

- **Proposal 1**—Election of the three Class III 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, 2022.
- **Proposal 3**—Approval of an amendment to our restated Certificate of Incorporation to effect an increase in the total number of our authorized shares from 455,000,000 to 555,000,000 and in the total number of authorized shares of common stock from 450,000,000 to 550,000,000.

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, 2022; and
- FOR the amendment to our restated Certificate of Incorporation to increase the total number of authorized shares of our common stock.

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), but will have the effect of a vote against Proposal 3 (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 2022 (Proposal 2) is considered a "routine" matter under applicable rules. The election of directors (Proposal 1) and the approval of the amendment to our restated Certificate of Incorporation (Proposal 3) 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 and Proposal 3.

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 any broker non-votes. Abstentions and broker non-votes will not count toward the vote totals for Proposal 1 but will be counted with the same effect as an "Against" vote for Proposal 3.

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

- **Proposal 1—Election of the Board's three 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 three 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, 2022. 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 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.

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, 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.

Other Matters

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 2022 Annual Meeting of Stockholders, at no charge, a copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 (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 https://investors.amyris.com/annual-reports 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.

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 2023, we must receive the proposal at our principal executive offices, addressed to the Secretary, no later than December 14, 2022. To comply with the universal proxy rules (once effective), stockholders who intend to solicit proxies in support of director nominees other than the company's nominees must provide notice that sets forth the information required by Rule 14a-19 under the Exchange Act no later than March 3, 2023. In addition, a stockholder proposal that is not intended for inclusion in our Proxy Statement under Rule 14a-8 may be brought before the 2023 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 earlier than February 11, 2023 nor later than March 13, 2023.

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
Chief Legal Officer and Secretary
April 11, 2022

Amyris, Inc.
5885 Hollis Street, Suite 100
Emeryville, California 94608

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 ongoing impact of the COVID-19 pandemic on our business, financial condition and results of 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; and other risks detailed from time to time in filings we make with the Securities and Exchange Commission, 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.

Appendix A — Certificate of Amendment of Restated Certificate of Incorporation

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 Five Hundred Fifty-Five Million (555,000,000) shares, consisting of two classes: Five Hundred Fifty Million (550,000,000) 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 Chief Legal Officer and Secretary this day of May, 2022 and the foregoing facts stated herein are true and correct.

AMYRIS, INC.

By: ______________________________

Name: Nicole Kelsey

Title: Chief Legal Officer and Secretary

PROXY

[THIS PAGE INTENTIONALLY LEFT BLANK]

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2021

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	The Nasdaq Stock Market LLC 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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 30, 2021, the last business day of the registrant's most recently completed second fiscal quarter, was $2,672.8 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 February 25, 2022: 311,658,460

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement to be filed for its 2022 Annual Meeting of Stockholders are incorporated by reference into Part III hereof. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the end of the fiscal year covered by this Annual Report on Form 10-K.

[THIS PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

AMYRIS, INC.

FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2021

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.

Part I

Item 1. Business

Overview

We are a high growth, biotechnology company at the forefront of delivering sustainable solutions that are better for people and the planet. To accelerate the world's transition to sustainable consumption, we create, manufacture and commercialize consumer products and ingredients that reach more than 300 million consumers. Currently, the largest driver of our revenue is derived from marketing and selling Clean Beauty, Personal Care and Health & Wellness consumer products through our direct-to-consumer ecommerce platforms and a growing network of retail partners. We also sell sustainable ingredients to sector leaders that serve Flavor & Fragrance (F&F), Nutrition, Food & Beverage, and Clean Beauty & Personal Care end markets.

Our ingredients and consumer products are powered by our fermentation-based Lab-to-Market™ technology platform. This technology platform drives the portfolio connection between our proprietary science and formulation expertise, our manufacturing capability at industrial scale, and our ability to commercialize sustainable products that make a difference in people's lives. We believe that our technology platform offers advantages to traditional methods of sourcing similar ingredients (such as petrochemistry and extraction from organisms). Our technology platform allows for renewable and ethical sourcing of raw materials, less resource-intensive production, minimal impact on sensitive ecosystems, enhanced purity and safety profile, less vulnerability to climate disruption, and improved supply chain resilience. We bring together biology and engineering to generate more sustainable materials that would otherwise be scarce or endangered in nature. Our technology platform leverages state-of-the-art machine learning, robotics and artificial intelligence, enabling us to rapidly bring new innovation to market. Our revenue is generated from consumer product sales, ingredient product sales, research and development collaboration programs and grants, and consumer marketing services.

We were founded in 2003 in the San Francisco Bay Area by scientists from the University of California, Berkeley. Through a grant in 2005 from the Bill & Melinda Gates Foundation, we developed technology capable of creating microbial strains that produce artemisinic acid, a precursor of artemisinin, an anti-malarial drug. Through our new technology, we produced a renewable farnesene brand, Biofene®, a long-chain, branched hydrocarbon molecule that we manufacture through fermentation using engineered microbes, initially targeted at the renewable fuel market. Over the last decade, we strategically transitioned our business model from low margin commodity markets to higher margin specialty ingredients markets. We partner with our customers to create sustainable, high performance, cost competitive molecules that replace a less sustainable ingredient in their supply chains. We commercially scale and manufacture those molecules and have 13 molecules currently in the market.

The ingredients we have created through our technology platform are an integral part of how we differentiate our brands. We have successfully formulated our sustainably sourced, fermentation-based ingredients such as Squalane, Hemisqualane™, and Steviol Glycoside Rebaudioside M (Reb M) into our consumer brands. All of our non-government partnerships include commercial terms for the supply of molecules we produce at commercial scale. The first molecule to generate revenue for us after farnesene was a fragrance molecule launched in 2015. Since this launch, our partners have indicated increasing demand due to the cost-advantaged position, high purity, and sustainable production methods of our molecules. In 2019, we commercially produced and shipped our Reb M that is an alternative sweetener and zero calorie sugar replacement for food and beverages. We added six new ingredients to our portfolio in 2020 and three new ingredients to our portfolio in 2021.

Our time from lab to market for molecules has decreased from three to four years to less than a year for our most recent molecule, mainly due to our ability to leverage our technology platform with proprietary strain construction, screening and analytics tools, advanced lab automation, and data integration. Our state-of-the-art infrastructure includes industry-leading strain engineering and lab automation located in Emeryville, California, pilot-scale production facilities in Emeryville and Campinas, Brazil, a demonstration-scale facility in Campinas and a commercial scale production facility in Leland, North Carolina (which is part of our Aprinnova joint venture). While a wide variety of feedstocks for production exists, we source Brazilian sugarcane for our large-scale production because of its supply resilience, renewability, low cost, and relative price stability. We are in the process of constructing a new purpose-built, large-scale specialty ingredients facility in Brazil, which we anticipate will allow for the manufacture of up to five products concurrently. We expect construction to be completed in the first half of 2022. Pending commissioning of the new facility, we continue to manufacture our products at manufacturing sites in Brazil, the United States and Europe.

Consumer Revenue

We began 2021 with three consumer brands, Biossance® clean beauty skincare, Pipette® clean baby skincare, and Purecane™ zero-calorie sweetener. During the second half of 2021, we launched five additional consumer brands in the Clean Beauty & Personal Care end market, including Terasana® clean skincare, Costa Brazil® luxury skincare, OLIKA™ clean wellness, Rose Inc.™ clean color cosmetics, and JVN™ clean haircare. See "Properties" in Part I, Item 2 of this Annual Report on Form 10-K for information regarding our new leased office and retail space for certain of our consumer brands.

We have various retail partnerships associated with our consumer business. These partners include Sephora, Target, Amazon, Walmart, and others. We also partner with various brand ambassadors who share our vision for a sustainable future to build brand recognition for our consumer brands, including Rosie Huntington-Whiteley for Pipette, Jonathan Van Ness for Biossance and JVN Haircare, and Reese Witherspoon for Biossance. We have used equity, royalty, or consulting arrangements to remunerate these ambassadors for their engagement with our brands.

Ingredients License Revenue

We partner with sector leaders in the broader ingredients sector to bring our unique, sustainably sourced ingredients to market. Through these partnerships, we realize the market potential of our ingredients by leveraging their large go-to-market footprint, commercial relationships, and formulation capability. We have active partnerships with Koninklijke DSM N.V. (DSM) for our F&F portfolio, Ingredion Incorporated (Ingredion) for our Reb M, Yifan Pharmaceutical Co., Ltd. (Yifan) for our vitamins, MF 92 VENTURES LLC (Minerva) for the sustainable production and distribution of products in the recombinant protein segment, and ImmunityBio (ImmunityBio) for a COVID-19 vaccine.

In 2017, we monetized the use of one of our mature molecules in certain fields of use by licensing farnesene to DSM. We also sold to DSM our subsidiary Amyris Brasil Ltda., which owned and operated a biofuel manufacturing facility in Brotas, Brazil that manufactures farnesene. On March 31, 2021, we entered into a license agreement and asset purchase agreement pursuant to which DSM acquired exclusive rights to our F&F product portfolio, which included intellectual property licenses and the assignment of related supply agreements, for upfront consideration totaling $150 million, and up to $235 million of contingent consideration if certain commercial milestones are achieved between 2022 and 2024 (for payout in 2023 through 2025). We also entered into a 15-year manufacturing agreement to manufacture certain F&F ingredients for DSM for supply to third parties.

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 the fourth quarter of 2018, we were notified by the U.S. Food and Drug Administration (FDA) that we received its Generally Recognized As Safe (GRAS) designation concurrence and began producing commercial quantities of Reb M. Our Reb M is produced from sugarcane, making it more sustainable and cost efficient than other natural sweeteners, and we believe its profile provides advantages in taste and total process economics for blends and formulations. In June 2021, we entered into an intellectual property license agreement with PureCircle Limited (PureCircle), a subsidiary of Ingredion, whereby we (i) granted certain intellectual property licenses to PureCircle to make, have made, commercialize and advance the development of sustainably sourced, zero-calorie, nature-based sweeteners and potentially other types of fermentation-based ingredients, as the exclusive global business-to-business commercialization partner for our sugar reduction technology, (ii) entered into a product supply and profit sharing agreement to provide manufacturing services and products to PureCircle, and (iii) assigned and transferred certain customer contracts to PureCircle related to the sale and distribution of Reb M. We continue to own and market our Purecane® consumer brand offering of tabletop and culinary sweetener products. As consideration for the license and product supply agreements, we received a $10 million license fee at closing and may receive additional payments in the aggregate of up to $35 million upon achievement of certain milestones related to Reb M sales and manufacturing cost targets. Additionally, under the product supply and profit sharing agreement, we will earn revenues from product sales to PureCircle and a profit share from future product sales, including RebM (alone or in a blended product), by PureCircle.

In the third quarter of 2018, we entered into a license and collaboration agreement with a subsidiary of Yifan, a leading Chinese pharmaceutical company. Collaboration and research and development work continue under three active licenses with a subsidiary of Yifan.

Research and Development, Joint Ventures and Collaborations Revenue

From time to time, we enter into joint ventures and collaborations with partners for the commercialization of our ingredients. For example, in 2016, we entered into a joint venture agreement with Nikko Chemicals Co., Ltd., an existing commercial partner of ours, and Nippon Surfactant Industries Co., Ltd., an affiliate of Nikko (collectively, Nikko) to focus on the worldwide commercialization of the Neossance cosmetic ingredients business. The joint venture was re-named Aprinnova, LLC. In 2020, we formed a new entity (Clean Beauty Collaborative) with Rosie Huntington-Whiteley to collaborate in the development of a new line of cosmetics products leveraging the Rose, Inc. brand and content platform and our bioengineered ingredients, including Squalane and Hemisqualane. In 2021, Rose, Inc. launched its first collection of clean cosmetics and skincare products. In 2021, we also entered into joint venture agreements with Minerva to develop molecules for the sustainable production and distribution of products in the recombinant protein segment, and with ImmunityBio, a clinical-stage immunotherapy company, for the development of vaccines, including a next-generation COVID-19 vaccine. In connection with entering into license and product supply agreements with PureCircle in June 2021 as described above, Ingredion purchased a minority membership interest in Amyris RealSweet LLC (RealSweet), our subsidiary, which owns the new manufacturing facility under construction in Brazil.

We also work with committed long-term collaboration partners who are leaders in their respective sectors. These partners provide rapid access to large-scale volumes, expertise regarding current ingredient demand, and an understanding of costs and other specifications that support market adoption. These partnerships assist us in ensuring market fit, technology need, and scale. Our partners access our Lab-to-Market technology platform and industrial fermentation expertise to reduce environmental impact, enhance performance, reduce supply and price volatility, and improve cost. Our partners include F&F companies such as Firmenich S.A. (Firmenich) and Givaudan International, SA (Givaudan), nutrition companies such as DSM and Yifan, and food ingredient companies such as Ingredion. We have also worked closely with the U.S. government, including the U.S. Department of Energy and the Defense Advanced Research Projects Agency (DARPA).

Technology

Our Lab-to-Market technology platform utilizes highly optimized and automated molecular biology, analytical, and process development tools combined with machine learning algorithms and statistical models 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 the chemicals used in our everyday lives. We believe that we are one of the first companies to apply microbial engineering towards the manufacturing of a wide range of molecules with commercial applications. Over the last decade, this has required significant, targeted investment in our research and development capabilities. To date, we have successfully scaled up 13 molecules with multiple molecules in development. This investment has also resulted in the development of a suite of strains capable of producing greater than 250 molecules across 15 chemical classes.

In addition to investment of our own funds, we have also been awarded multiple grants from the U.S. government; together, these funds have been used to develop our Lab-to-Market technology platform comprised of highly optimized strain and process development methods, sophisticated machine learning algorithms and statistical models, and proprietary robotic tools.

We built our Lab-to-Market technology platform based on commercial and technological considerations. A few of the commercial considerations that impact our molecule selection are:

1. Our core activities in Clean Beauty & Personal Care and Health & Wellness;
2. Industries or commercial opportunities where our technology can deliver the best performance, sustainability profile and value, in accordance with our No Compromise® commitment; and
3. Economic opportunities based on either the size of the total addressable market or the ability of our formulation to disrupt the market.

Certain technological considerations impact our molecule development selection such as, for example, our ability to:

1. Leverage our existing technology platform in new ways based on prior learnings relating to metabolic pathways and chemical properties;
2. Amplify value by differentiating new applications;
3. Match new chemical classes with new end markets; and
4. Valorize fermentation process and other agricultural waste streams.

Strain Engineering

Researchers around the world are continuously learning how the complex biological processes in organisms work. We believe that the best method for development of commercially viable strains is to test as many hypotheses as accurately and quickly as possible to accelerate this learning process. Our proprietary Lab-to-Market technology platform allows us to design, build and analyze thousands of strains in a single experiment, thereby enabling us to test thousands of hypotheses simultaneously. Extensive automation across our pipeline has resulted in significant decreases in the average time and cost to engineer a manufacturing-ready strain. In total, we have had an exponential increase in the number of molecules in our pipeline in active development with relatively minimal increases in our yearly R&D spend.

Importantly, 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.

Process Development

In order to maximize the quantity and quality of products we produce, we have invested extensively in advanced capabilities (including prediction models and analytical tools), which include fermentation optimization and the development of scalable product isolation techniques which enable cost effective manufacturing. We have developed scalable manufacturing processes for a wide variety of product types, including insoluble liquids and solids, intracellular products, water soluble solids, and gaseous products. Recently developed products have required increasingly complex purification strains and stringent product purity requirements, yet the overall time to develop a scalable, cost-effective manufacturing process has decreased due to a combination of increased automation and experience.

Upscaling and Commercialization

Microbial engineering can be unpredictable, and successful commercialization depends heavily on expertise in process scale-up and manufacturing. We have successfully scaled up and commercially manufactured 13 distinct molecules included in thousands of leading global brands. Our process development and technology transfer expertise results in accelerated speed to market, lower overall product development costs, and a significantly lower risk profile for any project we undertake. Strains and fermentation processes must be efficiently optimized to enable cost-effective production; downstream recovery and purification processes must be identified and streamlined to achieve appropriate product purity and maximize facility throughput; and all unit operations must be tested for performance in appropriate scaled-down models before they are implemented at commercial scale manufacturing facilities. Our unique infrastructure to support this scale-up process includes hundreds of lab-scale fermentors (0.25 to 2 liter) and operating pilot plants in our facilities in Emeryville, California and Campinas, Brazil (multiple 300L and 1x 1000L fermentor), both of which are equipped with a wide range of downstream processing unit operations. In addition, five years of experience owning and operating the 1,200,000-liter production facility in Brotas, Brazil (sold in late 2017) enabled us to refine these scaled-down systems to mimic the commercial scale fermentation and recovery tools so that our findings may translate predictably from lab- and pilot-scale to commercial scale.

Manufacturing

We are currently manufacturing our ingredients by using a strategic network of contract manufacturers in Brazil, the United States and Europe. Until December 2017, we owned and operated a biofuel-oriented production facility located in Brotas, Brazil, which we sold to DSM because it was no longer a strategic fit with our portfolio. We subsequently entered into a supply agreement with DSM to purchase intermediate product from the Brotas facility.

We are currently constructing a new, multi-line specialty ingredients manufacturing facility in Brazil. We expect construction to be completed in the first half of 2022, with initial production commencing shortly thereafter. Once fully commissioned, this facility will enable us to manufacture up to five products concurrently.

For many of our products, we perform additional distillation or finishing steps to convert initial target molecules into other finished products. We also have a manufacturing facility in Leland, North Carolina through Aprinnova, our joint venture with Nikko, to convert our Biofene into squalane and other final products. See below under "Joint Ventures and Collaborations" for more information regarding our Aprinnova joint venture.

Product Distribution and Sales

We distribute and sell our sustainable consumer products to retailers and directly to consumers through online ecommerce web-sites. We distribute and sell our ingredients directly to distributors, formulators, collaboration partners, or through joint ventures, depending on the end-market. Generally, our R&D collaboration agreements include commercial terms, and sales are contingent upon achievement of technical and/or commercial milestones.

For the year ended December 31, 2021, revenue from key customers and from all other customers was as follows, with DSM revenue mostly related to the F&F strategic transaction we completed during the first quarter of 2021:

(In thousands)	Renewable Products	Licenses and Royalties	Collaborations, Grants and Other	Total Revenue	% of Total Revenue
DSM (related party)	$ 19,162	$149,612	$ 6,000	$174,774	51.1%
All other customers	130,541	24,200	12,302	167,043	48.9%
Total revenue	$149,703	$173,812	$18,302	$341,817	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. 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, and its foreign counterparts. We seek to avoid infringement 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.

As of December 31, 2021, we had 684 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 further 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, Costa Brazil, Hemisqualane, JVN, Lab-to-Market, No Compromise, OLIKA, Pipette, Purecane, Rose Inc., and Terasana 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 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. We view competition principally as those products, typically based on traditional chemistries or are derived from non-sustainable sources that we are replacing with our sustainable products.

Clean Beauty & Personal Care

We develop and sell active cosmetic ingredients and consumer products in the Clean Beauty & Personal Care markets, creating a competitive landscape that includes ingredient suppliers, Clean Beauty & Personal Care and consumer goods companies. 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.

Health & Wellness

Many active ingredients in the nutraceutical market are made via chemical synthesis by suppliers that have a deep chemistry know-how and production facilities, including ingredient suppliers. We may compete directly with these companies with respect to specific ingredients or attempt to provide customers with a natural alternative that is more cost effective or higher performing than those derived from chemistry. For food ingredients, we also 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 F&F 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 higher cost and 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.

Competitive Factors

We believe the primary competitive factors in our target markets are:

- product performance and other measures of quality;
- product price;
- product cost;
- sustainability and social responsibility;
- dependability of naturally supplied ingredients; and
- infrastructure compatibility of products.

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 performance, pricing, product cost, availability, 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, Canada, Latin America (Brazil), Europe (UK), 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 material costs to comply with environmental laws and regulations, and failure to comply with these laws and regulations could expose us to material 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 GRAS, 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. In Europe, we are subject to similar regulations and have obtained approvals from Spain's Ministry of Environment for our production activities located in this country.

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 or maintain 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 Hemisqualane (Farnesane) without restriction in the United States. In 2016, Hemisqualane was similarly registered in Europe under REACH for manufacturing and sales.

Other Regulations

Certain of our current or emerging products in the Clean Beauty & Personal Care, Health & Wellness, and F&F end markets, including alternative sweeteners, nutraceuticals, F&F ingredients, skincare ingredients, cosmetic actives, and our proposed cannabinoid products, are subject to regulation by either the FDA or the Drug Enforcement Administration 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 (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 GRAS, 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 U.S. Department of Justice to initiate a seizure action, an injunction action, or a criminal prosecution in 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 or maintain 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 and COVID-19 vaccine development initiatives are uncertain and may not yield commercial results and are subject to material regulatory risks*."

In addition, our direct-to-consumer products such as our Biossance, JVN, and Rose, Inc. 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 direct-to-consumer products are subject to the regulations of the U.S. 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 direct-to-consumer products.

Human Capital

As of December 31, 2021, we had approximately 980 full-time employees, of whom approximately 740 were in the United States, 140 were in Brazil, 50 were in Portugal, and 50 were in the United Kingdom. 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. Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing, and integrating our existing and additional employees. The principal purposes of our equity incentive plans are to attract, retain and motivate selected employees and consultants through the granting of stock-based compensation awards and, with respect to selected employees, cash-based performance bonus awards.

Diversity and Inclusion

We are committed to enhancing the diversity of our workforce and promoting a culture of acceptance and equality throughout the organization. Our board of directors (Board) believes that human capital management, including diversity, equity, and inclusion (DEI) initiatives, are important to our success. We conduct an employee engagement survey on an annual basis, and the results of these surveys are discussed with the Leadership, Development, Inclusion and Compensation Committee of the Board, as well as with the executive leadership in order to continue to improve our DEI practices across the Company.

A Diverse Workforce: Our diversity makes us stronger. We strengthen the value we create as a company when we bring a broad-based workforce together to achieve our goals.

Promoting Inclusion: We promote employee affiliation groups focused on specific diverse needs of our workforce, and these diverse groups run their own programming to contribute to the education about, and to promote awareness of, their diversity. We believe these programs and related company-wide communications result in a more inclusive environment for our employees.

Equal Pay for Equal Work: We believe in compensating our employees fairly and equitably. We have instituted practices to ensure salary transparency, our management is guided on the principle of pay equity, and our compensation structures by job level and geographical market are available to all employees.

Health and Safety

Safety is one of our core values, which means that maintaining a safe and healthy work environment for our people, as well as our communities, resources, and planet, is our highest priority. We have a Safety Committee that is responsible for developing, promoting, and maintaining safety policies and procedures. We provide customized environmental health and safety training, carry out regular facility audits, assist employees with risk assessments, promote waste management and reduction practices, provide recommended personal protective equipment and offer a robust ergonomics program in compliance with the California Division of Occupational Health and Safety and the California Department of Public Health.

The global COVID-19 pandemic has caused us to take both a short-term and a long-term view of environmental, social and governance (ESG) risks and opportunities. Since early 2020, we have closely monitored the impact of the global COVID-19 pandemic on all aspects of our business, including its impact on our employees, partners, supply chain, and distribution network. Since the start of the pandemic, we developed a comprehensive response strategy including establishing a cross-functional COVID-19 Task Force and implementing business continuity plans to manage the impact of the COVID-19 pandemic on our employees and our business. We have applied recommended public health strategies designed to prevent the spread of COVID-19 and have been focused on the health and welfare of our employees. We have successfully managed to sustain ongoing critical production campaigns and infrastructure while staying in compliance with public health orders

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

Risk Factors Summary

Our business faces material risks. In addition to this summary below, you should carefully review the risk factors enumerated in the "Risk Factors" section immediately following this "Risk Factors Summary" section. We may be subject to additional risks and uncertainties not presently known to us or that we currently deem immaterial. Our business, financial condition, results of operations and growth prospects could be materially adversely affected by any of these risks, and the trading price of our common stock could decline by virtue of these risks.

Business and Operational Risks

- The impact of the COVID-19 pandemic on our business and operations;
- Our ability to scale and manage operations;
- Our reliance on contract manufacturers to meet our production and delivery goals;
- Our ability to generate revenue through existing and future customers, distributors and collaboration partners;
- Our ability to compete effectively;
- Our ability to effectively integrate acquisitions;
- Our ability to launch majority-owned consumer brands;
- Our reliance on collaboration arrangements to fund development and commercialization of our products; and
- Our ability to manage the expansion of our international operations.

Financial Risks

- Our ability to design and maintain effective internal controls;
- Our ability to achieve or sustain profitability given our history of net losses;
- Our ability to generate sufficient cash to fund operations and service our debt;
- Our ability to manage current, or our need to incur future, indebtedness which could impair our flexibility to pursue certain transactions and our ability to operate our business, as well as restrict access to additional capital; and
- Variability of future financial results.

Regulatory, Intellectual Property, and Legal Risks

- Regulatory risks relating to our use of genetically modified feedstocks and yeast strains to produce our products;
- New regulations or changes in regulation relating to our existing or future products, as well as any costs incurred to comply with applicable regulations;
- Our ability to obtain, maintain, protect, and enforce our intellectual property rights; and
- Costs and resources required to manage litigation related to the development and commercialization of our products.

Risks Related to the Ownership of Our Common Stock

- Volatility of our stock price;
- The composition of our capital stock ownership with relevant insiders; and
- Changes in government regulation relating to purchases of our common stock.

Risk Factors

Investing in our common stock involves 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, results of operations, or growth prospects. If any of the following risks actually occurs, our business, financial condition, results of operations, and growth 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.

Business and Operational Risks

Our business is currently adversely affected and could be materially adversely affected in the future by the evolving effects of the COVID-19 pandemic and related global economic slowdown as a result of the recent and potential future impacts on our supply chain, manufacturing and commercialization activities and other business operations.

The COVID-19 pandemic continues to have a significant impact on businesses and commerce and has resulted in authorities worldwide implementing numerous measures to contain or mitigate the outbreak of the virus, such as travel bans and restrictions, border controls, limitations on business activity, social distancing requirements, quarantines, and shelter-in-place orders. These measures have caused, and are continuing to cause, business slowdowns or shutdowns in affected areas and disruption of supply chains, both regionally and worldwide. The impact of the pandemic on our business and operations and our ability to execute our strategic plans remains uncertain and will depend on many unpredictable factors outside our control, including, without limitation, the extent, trajectory and duration of the pandemic, the availability, distribution, and uptake of vaccines and other effective treatments to treat the COVID-19 virus and any new variants thereof, the emergence of new variants that are more contagious, symptomatic, or fatal, the effectiveness of existing vaccines against such new variants, the time the medical community requires to respond to such variants, the imposition of and compliance with protective public safety measures, the ultimate duration and severity of the pandemic, and the impact of the pandemic on the global economy, and the related impacts on our development pipeline and on demand for our products.

Since the end of the first quarter of 2020, we have initiated several precautions in accordance with local regulations and guidelines to mitigate the spread of COVID-19 infection across our businesses. These precautions have impacted the way we carry out our business, including additional sanitation and cleaning procedures in our laboratories and other facilities, on-site COVID-19 testing, symptom confirmations, contact tracing, remote working when possible, and implementation of social distancing and staggered worktime requirements for our employees who must work on-site. If we are required to continue such measures for an extended period of time, particularly in sites with significant headcount such as our Emeryville, California headquarters, it could impact the ability of our employees to collaborate efficiently and advance research and development (R&D) projects as productively as they could in a typical lab environment or office setting. In addition, the loss or unavailability of our R&D staff or other key employees and executives, as a result of sickness of employees or their families or the responsibility of employees to manage family obligations while working from home, could negatively impact our business and operations and our ability to operate or execute our business strategy. Continued employee telecommuting activity also increases the risk of a security breach of our information technology systems. The changed environment under which we are operating could have an impact on our internal controls over financial reporting.

As a result of the COVID-19 pandemic, we have experienced disruption and delays in our global supply chain. For example, during the first half of 2020, we experienced COVID-19-related delays in sourcing alcohol for our Pipette hand sanitizer, and if the COVID-19 pandemic worsens, we may experience supply disruptions due to temporary closures, production slowdowns, staffing shortages, logistics, delays and disruptions in the manufacture and/or shipment of our products, including third-party facilities we rely upon in Brazil, Europe and the U.S. Moreover, the ongoing impacts of the COVID-19 pandemic could result in interruptions or delays in the operations of regulatory authorities, which may impact review or approval timelines; delays in necessary interactions with other agencies and contractors due to limitations in employee resources or forced furlough of government employees; termination of, or difficulties in procuring or maintaining, arrangements with third parties upon whom we depend such as manufacturers, including contract manufacturing organizations, suppliers and other strategic partners; and disruptions or restrictions on our ability to pursue partnerships and other business transactions.

Since the start of the COVID-19 pandemic in early 2020, there has been an overall decline in consumer spending particularly in retail brick-and-mortar channels due to store closures by our retail partners as mandated by local laws. Although we have experienced an increase in digital commerce and online purchasing, the effects of a prolonged pandemic could result in a continued negative impact on consumer spending, customer preferences, and overall demand. In addition, if COVID-19 impacts the financial position of our customers, resale channel partners or any of our collaboration partners, we may have difficulty collecting receivables or milestone and royalty payments, and our business and results of operations could be exposed to risks associated with uncollectible accounts or defaults on contractual payment obligations by our collaboration partners. If we are unable to generate sufficient cash from operations due to impacts of the COVID-19 pandemic or otherwise, we may need to raise additional funds. While the COVID-19 pandemic has not materially impacted our liquidity and capital resources to date, the duration and severity of any further economic or market impact of the COVID-19 pandemic remain uncertain, and there can be no assurance that it will not have an adverse effect on our liquidity and capital resources, including our ability to access capital markets, in the future, on terms that are favorable to us, or at all.

A limited number of customers, distributors and collaboration partners account for a material portion of our revenues. The loss of major customers, distributors or collaboration partners could harm our operating results.

Our revenues have varied materially from quarter to quarter and are dependent on sales to, and collaborations with, a limited number of customers, distributors and/or collaboration partners. We cannot be certain that customers, distributors and/or collaboration partners that have accounted for material 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, distributor or collaboration partner, our revenues could decline if we are unable to replace the lost revenues with revenues from other sources. Furthermore, if we lose one or more of our distributors and cannot replace the distributor in a timely manner or at all, our business, results of operation and financial condition may be materially adversely affected. For example, one of our key third-party logistics providers recently experienced a cyber-attack that shut down their operations, and as a result, we are experiencing delays in fulfilling sales orders for our products. Depending on the duration of this shutdown and our ability to redirect inventory fulfillment to another provider, this sales order fulfillment disruption could have a material adverse effect on our business, results of operations and financial condition. Since our business depends in part on such collaboration agreements, 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.

We face challenges producing our products at commercial scale or at commercially viable 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 or 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. 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, feedstock costs, exchange rates (primarily the Brazil Real versus the U.S. Dollar) 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 lead to higher working capital costs, which harm our cash position and could generate losses. Additionally, we may incur added storage costs and we may face issues related to the decrease in quality of our stored products as well as supply chain delays and disruptions, all of which can 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 been, 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. In December 2017, we sold our production facility to DSM and concurrently entered into a supply agreement with DSM to purchase output from the facility, which represents a significant portion of our expected supply needs (see Note 11, "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 ingredients plant in Brazil, which we anticipate will allow for the manufacture of up to five products concurrently and to produce both our specialty ingredients portfolio and our zero calorie sweetener ingredient. We currently anticipate facility construction to be completed in the first half of 2022 with initial production to commence in the second quarter of 2022. However, there can be no assurances that we will be able to complete such facilities 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 and logistics costs. Delays in construction can occur due to a variety of factors, including regulatory requirements, COVID-19-related factors, and our ability to fund construction and commissioning costs.

Once our large-scale production and purification facilities are built, we must successfully commission them, and they must perform as we expect. If we encounter significant delays in financing, 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, including as a result of the impacts of the COVID-19 pandemic, 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 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 and would therefore reduce our anticipated gross margins. Further, if our efforts to increase (or commence, as the case may be) production at the 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 facility will require large volumes of feedstock. For this facility in Brazil, we plan to rely primarily on Brazilian sugarcane. While in certain cases we have entered into feedstock agreements with suppliers which we expect to supply the sugarcane feedstock necessary to produce our products at our facility in Brazil that specify the pricing, quantity and product specifications, we cannot predict the future availability or price of these various feedstocks, nor can we be sure that our mill partners will be able to supply it in sufficient quantities or in a timely manner, whether due to COVID-19 impacts or otherwise. 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 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, its 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, increase supply risks and limit our ability to substitute supply. 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, supply and delivery, and logistics, and loss or termination of contract manufacturing relationships could harm our ability to meet our production goals.

In addition to our planned production and purification facilities discussed above, we must commercially produce, process and manufacture our products through the use of contract manufacturers, 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 materially raise our overall production cost or reduce our product's quality until we are able to optimize the supply chain.

Moreover, we rely on contract manufacturers to produce and/or provide downstream processing of our products, and we anticipate that we will continue 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 formulation, production, logistics, quality, sales, marketing, digital, managerial, compliance, and related capabilities or make arrangements with third parties to perform these services. If we are unable to establish adequate marketing, sales and distribution capabilities, whether independently or with third parties, we may not be able to appropriately commercialize such products. Additionally, the internet and other new technologies facilitate competitive entry and comparison shopping for our consumer products, and our digital channels compete against numerous websites, mobile applications and catalogs, which may have a greater volume of circulation and web traffic or more effective marketing through online media and social networking sites. There is no assurance that we will be able to continue to successfully maintain or expand our digital sales channels and respond to shifting consumer traffic patterns and digital buying trends. Our inability to adequately respond to these risks and uncertainties or successfully maintain and expand our digital business could have an adverse impact on our results of operations.

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 (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 the ongoing impacts of the COVID-19 global pandemic, 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, 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, squalene 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. Similarly, if we cannot 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, our renewable products may not succeed in the market, which would have a material adverse effect on our business, financial condition, results of operations and growth prospects.

We believe the primary competitive factors in our target markets are:
- product performance and other measures of quality;
- product price;
- product cost;
- sustainability and social responsibility;
- dependability of naturally sourced ingredients; and
- infrastructure compatibility of products.

Many of our competitors are much larger than us and have well-developed distribution systems and networks for their products, valuable historical relationships with the potential customers we are seeking to serve and much more extensive marketing and sales 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, brands, and significant resources to impede the development and acceptance of renewable products of the type that we are seeking to produce.

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 where we are seeking to enter and grow, we have collaboration partners to fund the research and development, commercialization, and production efforts required for the target products, and in some cases, for the ultimate sale of certain products to the customer under the agreement. 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 funding of research and development or product purchases would occur. These conditions include research and development programs and milestones, including 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 condition, results of operation and growth prospects.

Revenues from these types of relationships are a key part of our cash plan for 2022 and beyond. If we fail to collect expected collaboration revenues, 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 source new partners or 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 material 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 with respect to certain products, or in certain geographic 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 grant to our partners exclusive rights with respect to the development, production, and/or commercialization of particular products or types of products in specific geographic markets or industries, 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 for such products or 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 in order to engage with a third party with respect to such product, product type, or market. Such concessions are often costly or further limit our ability to conduct future business with respect to a certain product 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, geographic markets or industries for which we have previously granted exclusive rights, our ability to grow our business would be harmed, and our business, financial condition, and results of operations may be adversely affected.

Our relationship with DSM exposes us to financial and commercial risks.

In May 2017, DSM made an investment in us 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 one member of our board of directors (to the extent DSM maintains beneficial ownership of at least 4.5% of our outstanding common stock) 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 several new molecules in the Health and Nutrition field using our technology, which we would produce and DSM would commercialize. In December 2020, we entered into a Farnesene Framework Agreement with DSM, under which we assigned to DSM the supply of Farnesene to Givaudan International SA (Givaudan) for the production and sale of a single specialty ingredient. In March 2021, we entered into agreements, under which DSM acquired certain exclusive rights to our flavor and fragrance (F&F) product portfolio and an exclusive license to our F&F intellectual property, and under which we agreed to manufacture F&F ingredients for DSM through 2024. For more information regarding these and other transactions and arrangements with DSM, please see Note 4, "Debt," Note 6, "Stockholders' Equity (Deficit)," Note 10, "Revenue Recognition" and Note 11, "Related Party Transactions" in Part II, Item 8 of this Annual Report on Form 10-K.

DSM, due to its presence on our board of directors, equity ownership in us, and commercial relationships with us, may be able to influence our management, operations and affairs, including 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 us, DSM may have interests different from, and may not act in the best interests of, our other stockholders.

A significant portion of our operations is centered in Brazil, and our business could be adversely affected if we do not operate effectively in that country.

We may 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;
- effects of changes in currency exchange rates;
- changing interest rates;
- impact of the COVID-19 pandemic on the supply of raw materials, labor or services;
- tax burden and policies;
- 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 U.S. 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.

We continue to expand our international footprint and operations, and we may expand further in the future, which subjects us to a variety of risks and complexities which, if not effectively managed, could negatively affect our business.

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, operating in Europe and 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, results of operations and growth prospects may 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 and sanctions implemented by the United States or other countries, including sanctions imposed on Russia by the United States and other countries due to Russia's recent invasion of Ukraine, could materially and adversely affect our business, financial condition and results of operations.

Financial Risks

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.

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. In addition, 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. Effective internal controls are necessary for us to provide reliable financial reports and help us to prevent fraud. 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.

Control deficiencies in 2017 and 2018 resulted in the restatement of our audited consolidated financial statements for the year ended December 31, 2017 and our interim condensed consolidated financial statements for March 31, 2018, June 30, 2018 and September 30, 2018. Also, a control deficiency in 2019 identified prior to issuing our condensed consolidated financial statements as of and for the three and nine months ended September 30, 2019 resulted in us concluding this control deficiency was a material weakness and that our internal control over financial reporting was not effective as of December 31, 2019, and created 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.

Our management has remediated this material weakness. We cannot, however, guarantee that additional material weaknesses or significant deficiencies in our internal controls will not be discovered or occur in the future. We experienced significant growth in 2021 and anticipate continuing this growth trajectory to continue throughout 2022 through business acquisitions, hiring of additional employees, expanding of our facilities and operating locations, and significantly increasing our manufacturing activity and service delivery capabilities in Brazil and Europe, all of which could impact our ability to accurately and timely record transactions, and could result in internal control failures that lead to material weaknesses or significant deficiencies. If these events occur, 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. See Part II, Item 9A "Controls and Procedures" of this Annual Report on Form 10-K for additional information.

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 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 by Nasdaq, and the inability of registered broker-dealers to make a market in our common stock, which could further reduce our stock price and could harm our business.

We have a history of net losses to date, anticipate continuing to incur losses in the future, and may not be able to achieve or sustain profitability.

We have incurred 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, 2021, we had an accumulated deficit of $2.4 billion.

We may not be able to generate sufficient cash inflows from the sales of renewable products, licenses and royalties, and collaborations and grants to fund our anticipated operations and to service our debt obligations.

Our planned working capital needs and operating and capital expenditures for 2022, and our ability to service our outstanding debt obligations, are dependent on significant inflows of cash from product sales, licenses, and royalties, and grants and collaborations and, as 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 a material effect on our ability to continue with our business plans and our status as a going concern.

If we have insufficient cash, 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 or delay uncommitted capital expenditures, nonessential facilities and lab equipment, and information technology projects;
- Closely monitor our working capital position with contract manufacturers and other suppliers, as well as suspend operations at pilot plants and demonstration facilities; and
- Reduce expenditures for third party contractors, including consultants, professional advisors, and other vendors.

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;
- Introduce new consumer brands; 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 materially affect our ability to meet contractual requirements and increase the severity of the consequences described above.

We have incurred substantial debt, which could impair our flexibility and access to capital and adversely affect our financial position, and our business would be materially adversely affected if we are unable to service our debt obligations.

In November 2021, we sold $690.0 million aggregate convertible senior notes due 2026 (2026 Convertible Senior Notes). As of December 31, 2021, the principal amounts due under our debt instruments (including the 2026 Convertible Senior Notes and related party debt) totaled $740.9 million, of which $50.9 million is classified as current. We may incur additional indebtedness from time to time to finance working capital, research and product development efforts, strategic acquisitions, investments and partnerships, capital expenditures, including funding the completion of our new manufacturing facilities in Brazil, or other general corporate purposes, subject to the restrictions contained in our debt agreements.

Our substantial indebtedness may:

- limit our ability to use our cash flow or obtain additional financing (on satisfactory terms or at all) to fund working capital, capital expenditures, product development efforts, acquisitions, investments and strategic alliances, and for other general corporate requirements;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;
- increase our vulnerability to economic downturns and adverse competitive and industry conditions and place us at a competitive disadvantage compared to those of our competitors that are less leveraged;
- limit our flexibility in planning for, or reacting to, changes in our business and our industry and limit our ability to pursue other business opportunities, borrow more money for operations or capital in the future, and implement our business strategies;
- result in dilution to our existing stockholders in the event exchanges of our 2026 Convertible Senior Notes are settled in common stock; and
- restrict our ability to grant additional liens on our assets, which may make it more difficult to secure additional financing in the future.

In addition, servicing our debt requires a significant amount of cash. Our cash balance is significantly less than the principal amount of our outstanding debt, and we may not generate sufficient cash flow from our operations to pay our substantial debt, including any payments in connection with the 2026 Convertible Senior Notes, in which case we would be in default under our 2026 Convertible Senior Notes. We may also be required to raise additional working capital through future financings or sales of assets to enable us to repay our outstanding indebtedness as it becomes due. There can be no assurance that we will be able to generate cash or raise additional capital. 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 stockholders may be diluted. If we are unable to make payment on our secured debt instruments when due, the lender under such instrument 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.

One of our existing financing arrangements provides our secured lender with liens on substantially all of our assets, including our intellectual property, and contain financial covenants and other restrictions on our actions, which may restrict our ability to pursue certain transactions and operate our business.

We have granted liens on substantially all of our assets, including our intellectual property, as collateral in connection with a certain financing arrangement with an aggregate principal amount outstanding as of December 31, 2021 of $50.0 million and have agreed to significant covenants in connection with such transaction (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. 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 payment penalties or events of default under such instruments, the latter triggering acceleration of such indebtedness which could result in a material adverse effect on our business. If such indebtedness were to be accelerated, it could trigger an event of default under our other outstanding indebtedness, permitting acceleration of a substantial portion of our indebtedness. We have in the past had certain of our debt instruments accelerated for failure to make a payment when due. 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.

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 collaborations and grants revenues. We generate our consumer and ingredients product revenues from sales to partners and distributors and 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.

In addition, many of our new and novel ingredients 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 could adversely affect the demand for our products and the margin we receive for our product sales, which could harm our financial results. In addition, certain of our 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 the Company.

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. Certain 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, in recent years, we have started to market and sell our consumer products directly to end-consumers in the clean beauty and personal care market. We only have a few years of experience in marketing through digital channels and selling directly to consumers. It is therefore 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.

We have limited experience in marketing and sales of consumer products, and if we are unable to expand our marketing and sales organization to adequately address our customers' needs, our business may be adversely affected.

We rely on distributors for the sale of our products in the United States and in certain countries outside of the United States. We exert limited control over these distributors under our agreements with them, and if their sales and marketing efforts for our products in the region are not successful, our business would be materially and adversely affected. Locating, qualifying and engaging distribution partners with local industry experience and knowledge will be necessary in at least the short to mid-term to effectively market and sell our platform in certain countries outside the United States. We may not be successful in finding, attracting and retaining distribution partners, or we may not be able to enter into such arrangements on favorable terms. Even if we are successful in identifying distributors, such distributors may engage in sales practices that violate local laws or our internal policies. Furthermore, sales practices utilized by any such distribution parties that are locally acceptable may not comply with sales practices standards required under any U.S. laws that apply to us, which could create additional compliance risk. If our sales and marketing efforts by us or our distributors are not successful, we may not achieve significant market acceptance for our products, which would materially and adversely impact our business, financial condition, results of operations and prospects.

Our financial results could vary materially from quarter to quarter and are difficult to predict.

Our revenues and results of operations could vary materially 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:

- ongoing impacts of the COVID-19 pandemic on our business operations and the supply of raw materials, labor or services;
- 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 new contract manufacturers;
- depreciation of technology assets or the cost of conducting research and development activities on outdated equipment;
- 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 a COVID-19 outbreak, 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 customers, collaboration partners, contract manufacturers, 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 debt and 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 pandemics or natural disasters like earthquakes and tsunamis;
- 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.

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 material costs and expenses in the 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 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 materially appreciate or depreciate against the U.S. 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 U.S. dollar compared to those foreign currencies will increase our costs as expressed in U.S. 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 U.S. 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 convertible debt and derivative liabilities that we measure at fair value.

A portion of our outstanding convertible debt instruments are accounted for under Accounting Standards Codification 825-10-25, The Fair Value Option (ASC 825) and certain equity instruments are accounted for under Accounting Standards Codification 815, Derivatives and Hedging (ASC 815), as free standing derivative liabilities. ASC 825 allows companies to account for certain financial assets and financial liabilities at fair value, with the change in fair value recognized in net income each reporting period. The data used for the measurement must reflect assumptions that market participants would use in pricing the asset or liability. There is no current observable market for this convertible debt instrument and, as such, we determine the fair value of the debt instrument using a model based on an instrument with and without the conversion option and other embedded derivative features. The valuation model uses the stock price, conversion price, maturity date, risk-free interest rate, estimated stock volatility and estimated credit spread. ASC 815 requires companies to account for freestanding derivative financial instruments as a liability at fair value according to certain criteria. If the freestanding criteria are met, 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 account for certain free standing financial instruments as derivative liabilities in accordance with ASC 815. There is no current observable market for this type of derivative and, as such, we determine the fair value of the free standing derivatives using an option pricing model. The valuation model uses the period close stock price, expected term of the instrument, risk-free interest rate, estimated stock volatility and expected dividend yield. Changes in the inputs for these valuation models may have a material impact on the estimated fair value of the of the convertible debt instrument accounted for under the fair value option and 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 convertible debt instrument accounted for under the fair value option and the embedded derivative liabilities may have, on a U.S. GAAP basis, a substantial effect on our balance sheet and statement of operations from quarter to quarter and it is difficult to predict the effect on our future U.S. GAAP financial results, since valuation of the convertible debt instrument accounted for under the fair value option and the 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 instruments.

The accounting method for convertible debt securities that may be settled in cash, such as the 2026 Convertible Senior Notes, may have a material effect on our reported financial results.

Under Accounting Standards Codification 470-20, Debt with Conversion and Other Options, which we refer to as ASC 470-20, issued by the Financial Accounting Standards Board, which we refer to as FASB, an entity must separately account for the liability and equity components of the convertible debt instruments (such as the 2026 Convertible Senior Notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer's economic interest cost. The effect of ASC 470-20 on the accounting for the 2026 Convertible Senior Notes is that the equity component is required to be included in the additional paid-in capital section of stockholders' equity on our consolidated balance sheet at issuance, and the value of the equity component would be treated as a discount for purposes of accounting for the debt component of the 2026 Convertible Senior Notes. As a result, we will be required to record a greater amount of non-cash interest expense as a result of the amortization of the discounted carrying value of the 2026 Convertible Senior Notes to their face amount over the term of the 2026 Convertible Senior Notes. We will report larger net losses or lower net income in our financial results because ASC 470-20 will require interest to include both the amortization of the debt discount and the instrument's coupon interest rate, which could adversely affect our reported or future financial results, the trading price of our common stock and the trading price of the 2026 Convertible Senior Notes. In addition, under certain circumstances, convertible debt instruments (such as the 2026 Convertible Senior Notes) that may be settled entirely or partly in cash may be accounted for utilizing the treasury stock method for earnings per share purposes, the effect of which is that the shares issuable upon conversion of the 2026 Convertible Senior Notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the 2026 Convertible Senior Notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the number of shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued.

In August 2020, the Financial Accounting Standards Board published an Accounting Standards Update, which we refer to as ASU 2020-06, which amends the accounting standards for convertible debt instruments that may be settled entirely or partially in cash upon conversion. ASU 2020-06 eliminates requirements to separately account for liability and equity components of such convertible debt instruments and eliminates the ability to use the treasury stock method for calculating diluted earnings per share for convertible instruments whose principal amount may be settled using shares. Instead, ASU 2020-06 requires (i) the entire amount of the security to be presented as a liability on the balance sheet and (ii) application of the "if-converted" method for calculating diluted earnings per share. Under the "if-converted" method, diluted earnings per share will generally be calculated assuming that all the 2026 Convertible Senior Notes were converted solely into shares of common stock at the beginning of the reporting period, unless the result would be anti-dilutive, which could adversely affect our diluted earnings per share. However, if the principal amount of the convertible debt security being converted is required to be paid in cash and only the excess is permitted to be settled in shares, the if-converted method will produce a similar result as the "treasury stock" method prior to the adoption of ASU 2020-06 for such convertible debt security. ASU 2020-06 is effective for public companies for fiscal years beginning after December 15, 2021.

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 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, 2021, even if we attain profitability, which could adversely affect our cash flows and results of operations.

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 our independent registered public accounting firm at the time, 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, 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 the Company 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.

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 was diverted by these efforts. In addition, we have been and could continue to 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, financial condition, results of operations, and stock price.

Regulatory, Intellectual Property, and Legal Risks

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 materially 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. 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 materially 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", non-GMO 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 or maintain 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 to add the chemical to a product. The EPA has

90 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 are implementing similar laws and programs) for chemical registration or regulation in their jurisdictions, delays with the U.S. 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 & Personal Care and Health & Wellness markets, including Flavor & Fragrance ingredients, skincare ingredients and cosmetic actives, alternative sweeteners and nutraceuticals, may be subject to the approval of and regulation by the FDA, the European Food Safety Authority, Brazil ANVISA 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 we 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 could be materially 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, results of operations and growth prospects.

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 business, financial condition, and results of operations.

Our cannabinoid and COVID-19 vaccine development initiatives are uncertain and may not yield commercial results and are subject to material regulatory risks.

Since 2019, we have been 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. Certain synthetic cannabinoids may be viewed 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 partners 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, financial condition, results of operations and growth prospects. 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.

Since 2020, we have been working with our partners, ImmunityBio and Infectious Disease Research Institute, to develop a next-generation COVID-19 vaccine. In late 2021, we launched a joint venture with ImmunityBio to accelerate the manufacturing and commercialization of the COVID-19 vaccine on a worldwide basis. In the United States, to obtain approval from the FDA to market any of our future drug, biologic, or vaccine products, we are required to submit a new drug application (NDA) or biologics license application (BLA) to the FDA. Ordinarily, the FDA requires a company to support an NDA or BLA with substantial evidence of the product candidate's effectiveness, safety, purity and potency in treating the targeted indication based on data derived from adequate and well-controlled clinical trials, including Phase 3 trials conducted in patients with the disease or condition being targeted. Regulatory authorities in other jurisdictions around the world, such as the European Commission or the competent authorities of the European Union member states or other European countries, have similar requirements.

Our COVID-19 vaccine product candidate is expected to enter a Phase 1 human clinical trial in the first half of 2022. Upon successful completion of all required phases of clinical trials of our COVID-19 vaccine product candidate, we expect to seek regulatory approval in various jurisdictions for commercialization. If we are not successful in our clinical development, or if our clinical trials do not generate the data we expect, or if we are unable to obtain regulatory approval in a timely manner, or at all, for our COVID-19 vaccine product candidate, we may not be able to commercialize our COVID-19 vaccine according to our expected timeline, or at all, which would prevent us from receiving a return on our investments and could negatively impact our business and growth prospects.

Moreover, to obtain approval from the FDA or a similar international or national regulatory body of any product candidate, we or our suppliers for that product must obtain approval by the applicable regulatory body to manufacture and supply product, in some cases based on qualification data provided to the applicable body as part of our regulatory submission. Any delay in generating, or failure to generate, data required in connection with submission of the chemistry, manufacturing and controls portions of any regulatory submission could negatively impact our ability to meet our anticipated submission dates, and therefore our anticipated timing for obtaining FDA or similar international or national regulatory body approval, or our ability to obtain regulatory approval at all. In addition, any failure of us or a supplier to obtain approval by the applicable regulatory body to manufacture and supply product or any delay in receiving, or failure to receive, adequate supplies of a product on a timely basis or in accordance with applicable specifications could negatively impact our ability to successfully launch and commercialize products and generate sales of products at the levels we expect.

Given the global pandemic crisis, the COVID-19 vaccine development processes have been atypical and U.S. regulators have employed Emergency Use Authorization procedures to enable access to COVID-19 vaccine in an accelerated manner. We cannot predict the timelines or regulatory processes that may be required for the authorization or approval of our COVID-19 vaccine. In addition, our product candidates including our COVID-19 vaccine, and any other pharmaceutical products that we may develop or commercialize in the future, are subject to extensive FDA regulation and oversight, as well as oversight by other regulatory agencies in the United States and by comparable authorities in other countries. This includes, but is not limited to, laws and regulations governing product development, including testing, manufacturing, record keeping, storage and approval, as well as advertising and promotion. If we or any of our suppliers encounter manufacturing, quality or compliance difficulties with respect to any of our products, whether due to the evolving effects of the COVID-19 pandemic (including as a result of disruptions of global shipping and the transport of products) or otherwise, we may be unable to obtain or maintain regulatory approval or meet commercial demand for such products, which could adversely affect our business, financial condition, results of operations and growth prospects.

We may incur material costs to comply with environmental laws and regulations, and failure to comply with these laws and regulations could expose us to material 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, Brazil and the European Union. 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, 2021, we had 684 issued U.S. and foreign patents and 238 pending U.S. 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. Additional uncertainty may result from legal decisions by the U.S. 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;
- others will claim we are infringing on their patent claims;
- we will develop additional proprietary products or technologies that are patentable; or
- the patents of others will have a material 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. Accordingly, even if issued, we cannot predict the breadth, validity and enforceability of the claims upheld in our and other companies' patents. 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.

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, 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 DSM, Firmenich, Givaudan, Ingredion, Minerva 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 U.S. 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 typically 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 materially 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 are, 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 materially 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 could prevent or delay getting our products to market and divert management time and 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 prohibiting us from importing our products into the United States; and
- the requirement from a third party to pay substantial royalties to license its patent(s), 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 in our industry. 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. 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 and attention from 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, and at biotechnology or specialty chemical companies, including our competitors or potential competitors. We may be subject to claims that these employees 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 materially 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.

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 or be the subject of a government investigation or enforcement action. In the event that such claims, proceedings, investigations or actions 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, financial condition, results of operations or growth prospects.

We may need to commence litigation to enforce our intellectual property rights, which would divert resources and management's time and attention with uncertain results.

Our commercial success depends in part on obtaining, maintaining, and defending intellectual property protection for our products and assets. Enforcement of our intellectual property rights may require us to bring claims against third parties that are using our proprietary rights without permission, and such process 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.

Patent enforcement generally must be sought on a country-by-country basis, and the laws of some foreign countries do not protect intellectual property rights to the same extent as 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 biochemical 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 Defense Advanced Research Projects Agency (DARPA) and Department of Energy (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 the U.S. government determines 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 United States and substantially manufactured outside the United States 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 United States). 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. Further, 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.

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 the Company, 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. 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.

Risks Related to Ownership of Our Common Stock

Our stock price has been, and may continue to be, volatile.

The market price of our common stock has been, and may continue to be, subject to material volatility. 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:

- the ongoing impacts of the COVID-19 pandemic and resulting impact on stock market performance;
- 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 the prices of commodities associated with our business 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 or our general industry;
- additions or departures of key personnel;
- investors' general perceptions 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.

Additionally, the global economy and financial markets may be adversely affected by geopolitical events, including the current or anticipated impact of military conflict and related sanctions imposed on Russia by the United States and other countries due to Russia's recent invasion of Ukraine.

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 have been involved in four such lawsuits that were dismissed in September 2017, July 2018 and September 2018, and in another such lawsuit that was resolved in December 2020. We are currently defending three 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 materially harm our business. Any insurance we maintain may not provide adequate coverage against potential losses from such securities litigation, 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 financial condition and results of operations.

The concentration of our capital stock ownership and certain rights we have granted to insiders will limit the ability of other stockholders to influence corporate matters and presents risks related to our future securities offerings, which could substantially impact our business.

As of December 31, 2021, over 30% of our capital stock was beneficially owned by three significant stockholders, including Foris Ventures, LLC (Foris), DSM, and Vivo Capital LLC (Vivo). Furthermore, Foris and other insider stockholders hold 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 the Company. Additionally, Foris is indirectly owned by John Doerr, one of our current directors, and each of DSM and Vivo have one director on our Board of Directors pursuant to designation rights under their respective agreements with the Company. 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 materially 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 the Company, even if such actions would benefit our other stockholders.

While we have a related party transactions policy that requires certain approvals of any transaction between the 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.

Future sales and issuances of our common stock, convertible securities, warrants or rights to purchase common stock could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to decline.

From time to time, we have sold a substantial number of warrants and rights to acquire our common stock as well as convertible securities, which, if exercised, purchased, or converted, result in dilution to our stockholders. For example, in November 2021, we sold $690.0 million of 2026 Convertible Senior Notes. In the future, we may sell additional warrants, rights, convertible or exchangeable securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time, to finance our business operations and investments. To the extent we raise capital by issuing equity securities, our stockholders may experience substantial dilution.

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 materially. 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 to employees and directors 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 conditional conversion feature of our 2026 Convertible Senior Notes, if triggered, may adversely affect our financial condition and operating results.

In the event the conditional conversion feature of our 2026 Convertible Senior Notes is triggered, holders thereof will be entitled to convert the 2026 Convertible Senior Notes into shares of our common stock, at any time during specified periods at their option. If one or more holders elect to convert their notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than cash in lieu of any fractional share), we would be required to settle a portion or all of our conversion obligation through the payment of cash, which could adversely affect our liquidity. In addition, even if holders of the 2026 Convertible Senior Notes do not elect to convert their notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of the 2026 Convertible Senior Notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

The capped call transactions may affect the value of our 2026 Convertible Senior Notes and our common stock.

In connection with the pricing of the 2026 Convertible Senior Notes, we entered into capped call transactions with certain of the initial purchasers or their respective affiliates and other financial institutions (the "option counterparties"). The capped call transactions are expected generally to reduce the potential dilution to our common stock upon any conversion of the notes and/or offset any cash payments we are required to make in excess of the principal amount of converted notes, as the case may be, with such reduction and/or offset subject to a cap. In addition, the option counterparties and/or their respective affiliates may modify their hedge. This could also cause or avoid an increase or a decrease in the market price of our common stock or the notes, which could affect holders' ability to convert the 2026 Convertible Senior Notes which may potentially affect the number of shares and value of the consideration that note holders will receive upon conversion of the 2026 Convertible Senior Notes.

We are subject to counterparty risk with respect to the capped call transactions related to our 2026 Convertible Senior Notes.

The option counterparties may default or otherwise fail to perform, or terminate, their obligations under the capped call transactions. Our exposure to the credit risk of the option counterparties will not be secured by any collateral. Past global economic conditions have resulted in the actual or perceived failure or financial difficulties of many financial institutions. If an option counterparty becomes subject to insolvency proceedings, we would become an unsecured creditor in those proceedings. In addition, any default or other failure to perform, or a termination of obligations, by an option counterparty, may cause our shares of common stock to be further diluted more than we currently anticipate.

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.

The U.S. Department of Treasury implemented part of the Foreign Investment Risk Review Modernization Act (FIRRMA) on November 10, 2018. The FIRRMA 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 U.S. 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 the 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.

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 can be influenced by the research and reports that industry or securities analysts publish about us, our business, our market or our competitors. If any of the analysts who cover the

Company change their recommendation regarding our stock adversely, or provide more favorable relative recommendations about our competitors, our stock price may decline. If any analyst who covers the Company were to cease coverage of our stock or fail to regularly publish reports on the Company, 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. 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 (DGCL) 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. While we have agreed to opt out of Section 203 through our Certificate of Incorporation, our Certificate of Incorporation contains substantially similar protections to the Company and stockholders as those afforded under Section 203.

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.

The exclusive forum provisions in our restated Bylaws may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, or other employees, which may discourage lawsuits with respect to such claims.

In November 2020, we amended our restated Bylaws to provide that, to the fullest extent permitted by law, the Court of Chancery of the State of Delaware will be the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the DGCL, our certificate of incorporation, or our restated Bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Our restated bylaws further provide that the U.S. federal district courts will, to the fullest extent permitted by law, be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, or a Federal Forum Provision. Our decision to adopt a Federal Forum Provision followed a decision by the Supreme Court of the State of Delaware holding that such provisions are facially valid under Delaware law. While there can be no assurance that federal or state courts will follow the holding of the Delaware Supreme Court or determine that the Federal Forum Provision should be enforced in a particular case, application of the Federal Forum Provision means that suits brought by our stockholders to enforce any duty or liability created by the Securities Act must be brought in federal court and cannot be brought in state court.

These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, or other employees, which may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provisions contained in our Certificate of Incorporation or restated Bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, financial condition, and results of operations. In addition, Section 203 of the DGCL may discourage, delay or prevent a change in control of our company.

General Risks

Loss of key personnel, including key executives and key members of our research and development programs and our brand teams, and/or failure to attract and retain additional personnel could delay our product development programs and harm our research and development efforts and the commercialization efforts of our brands, which could impact 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 are 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 (including ones who were hired through acquisitions) into our operations in the United States, Brazil, and other countries in which we may seek to operate, can be lengthy and expensive. 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 any key technical and operational employee, 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, the loss 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, particularly if we cannot enforce any non-compete or non-solicitation obligations with respect to our 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 the Company may terminate the employee's 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 a material adverse effect on our results of operations and financial condition.

Increased security threats to information systems 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. Exposure to such risks is enhanced in our remote work environment as a result of the COVID-19 pandemic. 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 material demands on our management, our infrastructure, and our contract manufacturing relationships.

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 approximately 300 employees at the time of our initial public offering in 2010 to approximately 980 full-time employees at December 31, 2021. Our growth and diversified operations have placed, and may continue to place, material demands on our management and our operational and financial infrastructure, particularly with respect to integrating the business practices, operations, and personnel with those of any of our acquired businesses. 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;
- fully realize the anticipated benefits of our acquired companies and businesses;
- develop and maintain our relationships with existing and potential business partners including contract manufacturers;
- maintain our quality standards; and
- maintain customer satisfaction.

Managing our growth will require material 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, financial condition, and results of operations would be adversely impacted.

Our headquarters and other facilities are located in active earthquake, tsunami or hurricane zones, and an earthquake, hurricane, wildfire 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, wildfire, 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 material interruption in our business, damage or destroy our facilities, production equipment or inventory or those of our suppliers and cause us to incur material 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 earthquakes, fires 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.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The following is a summary of our principal facilities as of December 31, 2021. We lease our principal office and research and development facilities located in Emeryville, California. We hold a 50% ownership interest (through our joint venture with Nikko) in a manufacturing facility and related land located in Leland, North Carolina, lease a pilot plant and demonstration facility and related office and laboratory space located in Campinas, Brazil, are the majority owner of a manufacturing facility under construction located in Barra Bonita, Brazil, and are guarantor to a manufacturing facility lease in Reno, Nevada. In addition, in 2021 and 2022 we entered into certain leases in New York, New York, Miami, Florida and London, U.K. that will be used as office and retail space for our consumer business. Our lease agreements expire at various dates through the year 2032.

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)
Reno, Nevada	138,200	Manufacturing (guarantor)
BRAZIL		
Campinas, Brazil	44,000	Pilot plant, research and development and administrative
Barra Bonita, Brazil	1,937,500	Manufacturing

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 2022 and beyond, we will likely need to identify and secure access to additional production capacity in 2022 and beyond, which we plan to obtain by increasing our use of contract manufacturers, including our collaboration partner, DSM.

Item 3. Legal Proceedings

For a description of our significant pending legal proceedings, please see Note 9, Commitments and Contingencies of the Notes to Consolidated Financial Statements included 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 February 25, 2022, there were 81 common stockholders of record (not including beneficial holders of stock held in street names).

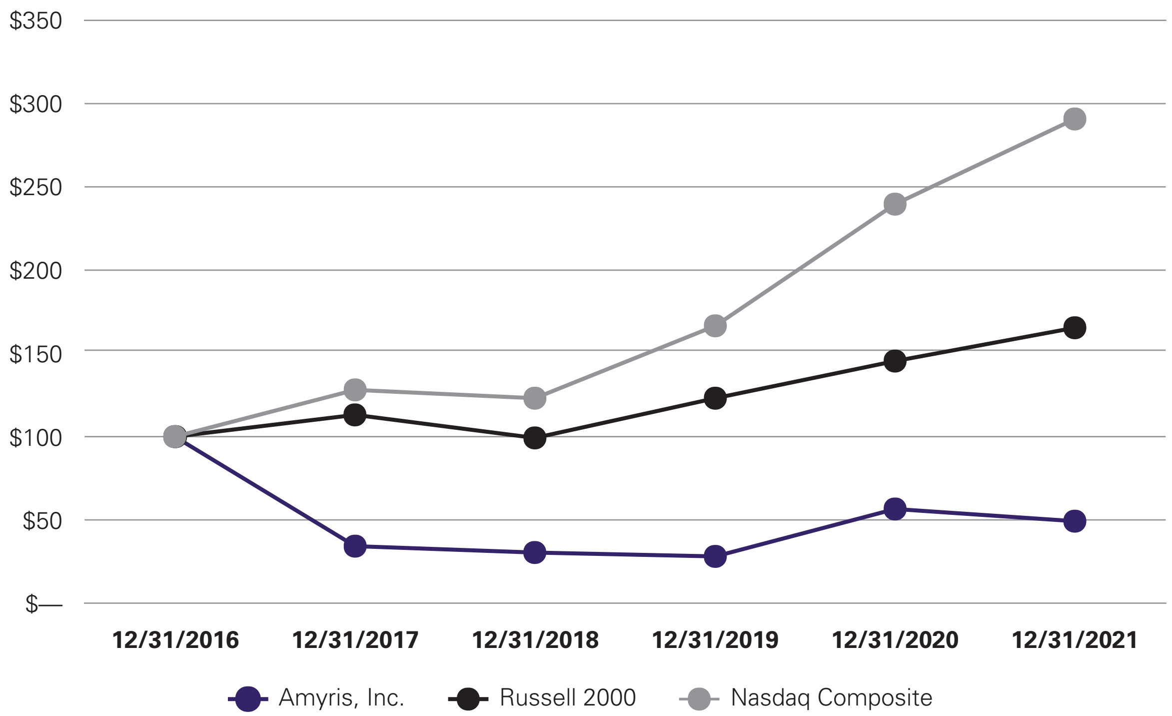
Dividend Policy

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.

Performance Graph

The following graph compares the cumulative total return on Amyris's common stock with the cumulative total return of the Vanguard Standard & Poor's (S&P) SmallCap 600 Index and the S&P 500 Index for the five-year period ended December 31, 2021. The graph assumes that the value of the investment in Amyris and in each index was $100 on December 31, 2016 and assumes that all dividends were reinvested.

COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN*
Among Amyris, Inc.,
the Russell 2000 Index and the Nasdaq Composite Index



* $100 invested on 12/31/2016 in stock or index, including reinvestment of dividends.

	December 31, 2016	December 31, 2017	December 31, 2018	December 31, 2019	December 31, 2020	December 31, 2021
Amyris, Inc.	$100.00	$ 34.25	$ 30.50	$ 28.22	$ 56.44	$ 49.41
Russell 2000	$100.00	$113.14	$ 99.37	$122.94	$145.52	$165.45
Nasdaq Composite	$100.00	$128.24	$123.26	$166.68	$239.42	$290.63

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, 2021, see the financial statements included in Part II, Item 8 of this Annual Report on Form 10-K.

See Note 16, "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, 2021.

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, our 2020 Equity Incentive Plan and our 2010 Employee Stock Purchase Plan, all as of December 31, 2021:

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	3,087,225	$9.91	13,731,320	5,782,707
Equity compensation plans not approved by security holders	—	—	—	—
Total	3,087,225	$9.91	13,731,320	5,782,707

(1) Includes 5,287,852 shares reserved for future issuance under our 2020 Equity Incentive Plan and 494,855 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, 2022, the number of shares available for future issuance under our 2020 Equity Incentive Plan is expected to be increased by up to 15,444,995 shares pursuant to the automatic increase provision contained in the 2020 Equity Incentive Plan and the number of shares available for future issuance under our 2010 Employee Stock Purchase Plan is expected to be increased by up to 3,088,999 shares, in each case pursuant to automatic increase provisions contained in the respective plans, as discussed in more detail below.

Our 2020 Equity Incentive Plan includes all shares of our common stock previously reserved but unissued under the 2010 Equity Incentive Plan and 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 or under our 2010 Equity Incentive Plan that cease to be subject to such options and (ii) issued under our 2005 Stock Option/Stock Issuance Plan or under our 2010 Equity Incentive Plan that are forfeited or repurchased by us at the original issue price, will become part of our 2020 Equity Incentive Plan reserve.

The number of shares available for grant and issuance under our 2020 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, Inclusion, and Compensation Committee in their discretion. In addition, shares will again be available for grant and issuance under our 2020 Equity Incentive Plan that are:

- subject to issuance upon exercise of an option or stock appreciation right granted under our 2020 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 2020 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 2020 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, Inclusion, 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 2020 Equity Incentive Plan and 2010 Employee Stock Purchase Plan, see Note 13, "Stock-based Compensation" in Part II, Item 8 of this Annual Report on Form 10-K.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview

We are a high growth, biotechnology company at the forefront of delivering sustainable solutions that are better for people and the planet. To accelerate the world's transition to sustainable consumption, we create, manufacture and commercialize consumer products and ingredients that reach more than 300 million consumers. Currently, the largest driver of our revenue is derived from marketing and selling Clean Beauty, Personal Care and Health & Wellness consumer products through our direct-to-consumer ecommerce platforms and a growing network of retail partners. We also sell sustainable ingredients to sector leaders that serve Flavor & Fragrance (F&F), Nutrition, Food & Beverage, and Clean Beauty & Personal Care end markets.

We began 2021 with three consumer brands, Biossance® clean beauty skincare, Pipette® clean baby skincare, and Purecane™ zero-calorie sweetener. During the second half of 2021, we launched five additional consumer brands in the Clean Beauty & Personal Care end market, including Terasana® clean skincare, Costa Brazil® luxury skincare, OLIKA™ clean wellness, Rose Inc.™ clean color cosmetics, and JVN™ clean haircare.

Our ingredients and consumer products are powered by our fermentation-based Lab-to-Market™ technology platform. This technology platform drives the portfolio connection between our proprietary science and formulation expertise, our manufacturing capability at industrial scale, and our ability to commercialize sustainable products that make a difference in people's lives. We believe that our technology platform offers advantages to traditional methods of sourcing similar ingredients (such as petrochemistry and extraction from organisms). Our technology platform allows for renewable and ethical sourcing of raw materials, less resource-intensive production, minimal impact on sensitive ecosystems, enhanced purity and safety profile, less vulnerability to climate disruption, and improved supply chain resilience. We bring together biology and engineering to generate more sustainable materials that would otherwise be scarce or endangered in nature. Our technology platform leverages state-of-the-art machine learning, robotics and artificial intelligence, enabling us to rapidly bring new innovation to market. Our revenue is generated from consumer product sales, ingredient product sales, research and development collaboration programs and grants, and consumer marketing services.

Our time from lab to market for molecules has decreased from three to four years to less than a year for our most recent molecule, mainly due to our ability to leverage our technology platform with proprietary strain construction, screening and analytics tools, advanced lab automation, and data integration. Our state-of-the-art infrastructure includes industry-leading strain engineering and lab automation located in Emeryville, California, pilot-scale production facilities in Emeryville and Campinas, Brazil, a demonstration-scale facility in Campinas and a commercial scale production facility in Leland, North Carolina (which is part of our Aprinnova joint venture). While a wide variety of feedstocks for production exists, we source Brazilian sugarcane for our large-scale production because of its supply resilience, renewability, low cost, and relative price stability. We are in the process of constructing a new purpose-built, large-scale specialty ingredients facility in Brazil, which we anticipate will allow for the manufacture of up to five products concurrently. We expect construction to be completed in the first half of 2022. Pending commissioning of the new facility, we continue to manufacture our products at manufacturing sites in Brazil, the United States and Europe.

COVID-19 Business Update

We closely monitor the impact of the global COVID-19 pandemic on all aspects of our business, including how it has and will impact our employees, partners, supply chain, and distribution network. Since the start of the pandemic in early 2020, we developed a comprehensive response strategy including establishing a cross-functional COVID-19 task force and implementing business continuity plans to manage the impact of the COVID-19 pandemic on our employees and our business. We have applied recommended public health strategies designed to prevent the spread of COVID-19 and have been focused on the health and welfare of our employees. We have successfully managed to sustain ongoing critical production campaigns and infrastructure while staying in compliance with State and County public health orders.

Accordingly, since the end of the first quarter of 2020, we have initiated several precautions in accordance with local regulations and guidelines to mitigate the spread of COVID-19 infection across our businesses, which has impacted the way we carry out our business, including additional sanitation and cleaning procedures in our laboratories and other facilities, on-site COVID-19 testing, temperature and symptom confirmations, instituting remote working when possible, and implementing social distancing and staggered worktime requirements for our employees who must work on-site. Our plans to reopen our sites and enable a broad return to work in our offices, laboratories and production facilities will continue to follow local public health plans and guidelines. As the effects of the COVID-19 pandemic and the availability of vaccines continue to rapidly evolve, even if our employees more broadly return to work in our offices, laboratories and production facilities, we have the flexibility to resume more restrictive on-site and remote work models, if needed, as a result of spikes or surges in COVID-19 infection, hospitalization rates or otherwise. See "*Risk Factors – Business and Operational Risks - Our business is currently adversely affected and could be materially adversely affected in the future by the evolving effects of the COVID-19* *pandemic and related global economic slowdown as a result of the recent and potential future impacts on our supply chain, manufacturing and commercialization activities and other business operations."*

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:

- Revenue recognition, including arrangements with multiple performance obligations;
- Valuation and allocation of fair value to 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;
- The valuation of debt for which we have elected fair value accounting; and
- The valuation of goodwill, intangible assets and contingent consideration payables, which are generated through business acquisitions.

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 2021 Form 10-K.

Results of Operations

In this section, we discuss the results of our operations for fiscal 2021 compared with fiscal 2020. We discuss our cash flows and current financial condition under "Liquidity and Capital Resources". For a discussion related to fiscal 2020 compared with fiscal 2019, please refer to Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the year ended December 31, 2020, which was filed with the U.S. Securities and Exchange Commission (SEC) on March 5, 2021, and is available on the SEC's website at www.sec.gov and our Investor Relations website at investors.amyris.com.

Revenue

Years Ended December 31, (In thousands)	2021	2020	Change
Revenue:			
Renewable products	$149,703	$104,338	43%
Licenses and royalties	173,812	50,991	241%
Collaborations, grants and other	18,302	17,808	3%
Total revenue	$341,817	$173,137	97%

Total revenue increased by 97% to $341.8 million in 2021. Renewable products revenue increased by 43% to $149.7 million in 2021, due to a $39.5 million, or 76% increase in consumer products revenue and a $6.0 million, or 11% increase in ingredients revenue.

Licenses and royalties revenue increased by 241% to $173.8 million in 2021, primarily due to a $149.6 million license of intellectual property for our flavors and fragrances molecules and certain farnesene technology to DSM and $10.0 million of license revenue from the licensing of RebM related intellectual property to PureCircle.

Grants and collaborations revenue increased by 3% to $18.3 million in 2021, mainly due to increased collaboration revenue from DSM.

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. Consequently, our revenues may vary significantly from one period to the next.

Cost and Operating Expenses

Years Ended December 31, (In thousands)	2021	2020	Change
Cost of products sold	$155,139	$ 87,812	77%
Research and development	94,289	71,676	32%
Sales, general and administrative	257,811	137,071	88%
Impairment	12,204	—	nm
Total cost and operating expenses	$519,443	$296,559	75%

nm = not meaningful

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 the diversity of profit margins within our product offerings and changes in product mix sold period over period, our cost of products sold typically does not change proportionately with changes in renewable product revenue period over period.

Cost of products sold increased by 77% to $155.1 million in 2021, due to a corresponding 43% increase in renewable products revenue, coupled with a significant increase in manufacturing input costs for our ingredients products.

Research and Development Expenses

Research and development expenses increased by 31.5% to $94.3 million in 2021, primarily due to increases in outside consulting professional services related to the IDRI collaboration and employee compensation related to an additional 73 employees.

Sales, General and Administrative Expenses

Sales, general and administrative expenses increased by 88% to $257.8 million in 2021, due to a $68.0 million increase in sales and marketing expense related to our consumer brands and a $21.8 million increase in employee compensation related to an additional 295 employees, mostly within our sales and marketing consumer brand teams.

Impairment

In 2021, we impaired the remaining $12.2 million of deferred cost of products sold asset related to manufacturing capacity fees paid to DSM for the production of RebM at DSM's Brotas, Brazil facility. Due to the anticipated timing of completing and commissioning our new fermentation facility in Barra Bonita, Brazil, which is anticipated by the end of the second quarter of 2022, the timing of the demand forecast for RebM, and the timing of production runs for other ingredients at the Brotas facility, we determined RebM will not be manufactured at the DSM facility in 2022 and concluded the deferred cost of products sold asset was no longer recoverable.

Other Income (Expense), Net

Years Ended December 31, (In thousands)	2021	2020	Change
Interest expense	$(25,605)	$ (47,951)	(47)%
Gain (loss) from change in fair value of derivative instruments	1,453	(11,362)	(113)%
Loss from change in fair value of debt	(38,649)	(89,827)	(57)%
Loss upon extinguishment of debt	(32,464)	(51,954)	(38)%
Other income (expense), net	580	666	(13)%
Total other expense, net	$(94,685)	$(200,428)	(53)%

Total other expense, net was $94.7 million in 2021, compared to $200.4 million in 2020. The $105.7 million decrease was primarily comprised of a $51.2 million decrease in loss from change in fair value of debt, a $22.3 million decrease in interest expense, a $19.5 million decrease in loss upon extinguishment of debt, and a $12.8 million swing from a loss to a gain in change in fair value of derivative instruments.

The decrease in loss from change in fair value of debt was due to the extinguishment of the Senior Convertible Notes during the first half of 2021 and a 12% decrease in our stock price during 2021.

The swing from a loss to a gain in change in fair value of derivative instruments was primarily due to a 12% decrease in our stock price during 2021; see Note 3, "Fair Value Measurement" in Part II, Item 8 of this Annual Report on Form 10-K for details regarding our outstanding derivative instruments.

The loss upon extinguishment of debt for the year ended December 31, 2021 was primarily due to a $28.9 million loss in connection with exchange of the Schottenfeld notes into common stock, and early payment penalties in connection with the repayment in full of certain other debt instruments.

The reduction in interest expense was due to a decrease in debt discount accretion, along with lower average debt principal balances in 2021 as compared to 2020.

Income Taxes

For the year ended December 31, 2021, we recorded an income tax benefit of $8.1 million related to the reversal of an uncertain tax position for which the statute of limitations had expired. See Note 14, "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)	2021	2020
Net cash (used in) provided by:		
Operating activities	$(181,333)	$(175,753)
Investing activities	(64,098)	(12,781)
Financing activities	701,962	222,525
Effect of exchange rate changes on cash, cash equivalents and restricted cash	359	(4,268)
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 456,890	$ 29,723

Liquidity

We have incurred 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, 2021, we had working capital of $369.4 million, an accumulated deficit of $2.4 billion, and cash and cash equivalents of $483.5 million.

As of December 31, 2021, the principal amounts due under our debt instruments (including related party debt) totaled $740.9 million, of which $50.9 million is classified as current. However, $50.0 million of the $50.9 million of current principal due is related party debt that is convertible into shares of the Company's common stock at $3.00 per share, which we anticipate will convert into common shares at maturity on July 1, 2022. One of our debt agreements contains various financial and non-financial covenants, including certain restrictions on our business — including restrictions on additional indebtedness, material adverse effect and cross default provisions — 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 our debt repayment obligations.

Based on our cash and cash equivalents of $483.5 million as of December 31, 2021, we believe that we have adequate resources to fund our operations during the next 12 months from the date of filing our 2021 Annual Report on Form 10-K. However, our ability to execute our planned operations, including the completion of our new specialty ingredients fermentation facility in Brazil, will depend in large part, on our ability to (i) minimize the anticipated negative cash flows from operations during the 12 months from the date of this filing and (ii) achieve certain milestones under the March 2021 DSM transaction and the June 2021 Ingredion transaction (see Note 10, "Revenue" and Note 5, "Mezzanine Equity", respectively in Part II, Item 8 of this Annual Report on Form 10-K for additional information), all of which are uncertain and/or outside of our control.

Our operating plan for 2022 contemplates a significant reduction in net operating cash outflows as compared to the year ended December 31, 2021, resulting from (i) revenue growth from sales of existing and new products with positive gross margins, (ii) reduced production costs as a result of technical developments and transitioning to the new manufacturing facility during the second half of 2022, and (iii) an increase in cash inflows from milestone royalties under the DSM and Ingredion license agreements. If we are unable to generate sufficient cash inflows from product sales, licenses and collaboration arrangements, we will need to obtain additional funding from new equity or 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.

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' Equity (Deficit)"

Cash Flows during the Years Ended December 31, 2021 and 2020

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, 2021, net cash used in operating activities was $181.3 million, which was primarily comprised of our $271.8 million net loss and a decrease of $44.9 million in working capital, partly offset by $135.4 million of non-cash charges. Non-cash charges were primarily comprised of a $38.6 million loss from change in fair value of debt, $33.4 million of stock-based compensation expense, and a $29.3 million non-cash loss upon extinguishment of debt. The decrease in working capital was primarily comprised of a $36.3 million increase in prepaid expenses and other assets and a $32.2 million increase in inventories, partly offset by a $37.4 million increase in accounts payable.

For the year ended December 31, 2020, net cash used in operating activities was $175.8 million, which was primarily comprised of our $326.9 million net loss and a decrease of $54.4 million in working capital, partly offset by $205.5 million of non-cash charges. Non-cash charges were primarily comprised of an $89.8 million loss from change in fair value of debt, a $52.0 million loss upon extinguishment of debt, $13.7 million of stock-based compensation expense, an $11.4 million loss from change in fair value of derivative instruments and $10.5 million of non-cash interest expense in connection with the release of pre-delivery shares to a debt holder in connection with a previous debt issuance. The decrease in working capital was primarily comprised of a $24.2 million increase in accounts receivable, a $16.2 million increase in inventories and a $4.0 million increase in contract assets.

Cash Flows from Investing Activities

For the year ended December 31, 2021, net cash used in investing activities was $64.1 million and was comprised of $45.6 million of property, plant and equipment purchases, and $18.5 million of cash used in acquisitions.

For the year ended December 31, 2020, net cash provided by investing activities was $12.8 million and was comprised of property, plant and equipment purchases.

Cash Flows from Financing Activities

For the year ended December 31, 2021, net cash provided by financing activities was $702.0 million, primarily comprised of $671.0 million from the issuance of debt and $190.3 million of proceeds from the issuance of common stock, partly offset by $81.1 million of capped calls purchased in connection with a new convertible debt instrument, $77.0 million of debt principal payments and $4.1 million of principal payments on financing leases.

For the year ended December 31, 2020, net cash provided by financing activities was $222.5 million, primarily comprised of $262.3 million of proceeds from the issuance of common stock and $15.6 million from the issuance of debt, partly offset by $52.0 million of principal payments on debt and $3.5 million of principal payments on financing leases.

Contractual Obligations

The following is a summary of our contractual obligations as of December 31, 2021. The contractual obligations for 2022 represent our non-discretionary cash payments for the period:

Payable by Year Ended December 31, (In thousands)	Total	2022	2023	2024	2025	2026	Thereafter
Principal payments on debt	$740,937	$ 50,937	$ —	$ —	$ —	$690,000	$ —
Interest payments on debt	61,496	20,067	10,350	10,350	10,350	10,379	—
Operating leases	52,629	12,309	7,641	4,287	4,181	4,191	20,020
Construction costs in connection with new production facility	38,389	38,389	—	—	—	—	—
Financing leases	229	150	21	21	21	16	—
Contract termination fees	1,345	1,345	—	—	—	—	—
Total	$895,025	$123,197	$18,012	$14,658	$14,552	$704,586	$20,020

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

FORM 10-K

The market risk inherent in our market risk sensitive instruments and positions is the potential loss arising from adverse changes in the price of our common stock, foreign currency exchange rates, interest rates and commodity prices.

Amyris Common Stock Price Risk

We are exposed to potential losses related to the price of our common stock. At each balance sheet date, the fair value of our derivative liabilities and certain of our outstanding debt instruments for which we have elected fair value accounting, is remeasured using current fair value inputs, one of which is the price of our common stock.

During any particular period, if the price of our common stock increases, there will likely be increases in the fair value of our derivative liabilities and our debt instruments for which we have elected fair value accounting. Such increases in fair value will result in losses in our consolidated statements of operations from change in fair value of derivative instruments and from change in fair value of debt. Conversely, a decrease in the price of our stock during any particular period will likely result in gains in relation to these derivative and debt instruments. Given the current and historical volatility of our common stock price, any changes period-over-period have and could in the future result in a significant change in the fair value of our derivative liabilities and convertible debt instruments and significantly impact our net income during the period of change.

Foreign Currency Exchange Risk

Most of our sales contracts are denominated in U.S. dollars, and therefore our revenues are not currently subject to significant foreign currency risk.

The functional currency of our consolidated Brazilian subsidiary is the local currency (Brazilian Real), in which recurring business transactions occur. We do not use currency exchange contracts as hedges against our investment in that subsidiary.

Our permanent investment in Brazil was $133.9 million as of December 31, 2021 and $56.1 million as of December 31, 2020, using the exchange rate at each date. A hypothetical 10% adverse change in Brazilian Real exchange rates would have had an adverse impact to Other Comprehensive Loss of $13.4 million as of December 31, 2021 and $5.6 million as of December 31, 2020.

We have also evaluated foreign currency exposure in relation to our other non-U.S. Dollar denominated assets and liabilities and determined that there would be an immaterial effect on our results of operations from 10% exchange rate fluctuations between those currencies and the U.S. Dollar.

Interest Rate Risk

Our exposure to market risk for changes in interest rates relates primarily to our outstanding debt obligations, including embedded derivatives therein. We generally invest our cash in investments with short maturities or with frequent interest reset terms. Accordingly, our interest income fluctuates with short-term market conditions. As of December 31, 2021, our investment portfolio consisted of money market funds and certificates of deposit, both of which are highly liquid. Due to the short-term nature of our investment portfolio, we do not believe that an immediate 10% increase in interest rates would have a material effect on the fair value of our portfolio. Since we believe we have the ability to liquidate our investment portfolio, we expect that our operating results or cash flows would not be materially affected by a sudden change in market interest rates on the portfolio.

As of December 31, 2021, all of our outstanding debt was in fixed rate instruments. As a result, changes in interest rates would not affect interest expense and payments in relation to our debt.

Commodity Price Risk

Our primary exposure to market risk for changes in commodity prices relates to our procurement of products from contract manufacturers and other suppliers whose prices are affected by the price of sugar feedstocks. Our suppliers manage exposure to this risk primarily through the use of feedstock pricing agreements.

Item 8. Financial Statements and Supplementary Data

AMYRIS, INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

MGO Certified Public Accountants

Report of Independent Registered Public Accounting Firm (PCAOB Number 324)

To the Board of Directors and Stockholders of Amyris, Inc.

Opinion on the Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying balance sheets of Amyris, Inc. and subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related statements of operations, comprehensive loss, stockholders' equity (deficit) and mezzanine equity, and cash flows for each of the three-year period ended December 31, 2021, and the related notes (collectively referred to as the "consolidated financial statements"). We also have audited Company's internal control over financial reporting as of December 31, 2021, based on criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO)".

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinion

The Company's management is responsible for these consolidated financial statements, 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 entity's consolidated financial statements and an opinion on the entity's internal control over financial reporting 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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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 responds 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. Our audit of internal control over financial reporting 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 the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

An entity's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. An entity'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 entity; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the entity are being made only in accordance with authorizations of management and directors of the entity; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the entity'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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Valuation of revenue recognition

Critical Audit Matter Description

As described in Notes 1 and 10, The Company recognizes revenue from the sale of renewable products, licenses and royalties from intellectual property, and grants and collaborative research and development services. Contracts with customers may contain multiple performance obligations and may contain upfront license fees, research and development services, contingent milestone payments upon achievement of contractual criteria, and royalty fees based on licensees' product revenue or usage. The Company makes significant judgments in determining revenue recognition for customer contracts.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management's conclusion on revenue recognition, include the following, among others:

- We tested the effectiveness of controls over the identification of distinct performance obligations, the determination of the timing of revenue recognition and the estimation of variable consideration.
- Examined sample of revenue contracts and other source documents to test management's identification of significant terms for completeness, including the identification of distinct performance obligations and variable consideration, within the context of the five-step model prescribed by ASC 606.
- Evaluating the reasonableness of management's judgments and estimates used to assess the standalone selling prices for new functional licenses when granted to customers as part of contracts containing multiple performance obligations.
- Evaluating the reasonableness and accuracy of management's judgments and estimates used in accounting for identified material rights, including transactions accounted for under the alternative approach to estimating the standalone selling price of a material right. This includes testing management's estimates of the expected consideration from the customer's exercise of options.
- Assessing the reasonableness of management's judgments and estimates to calculate variable consideration, and the timing of recognizing the related revenue subject to any constraints.
- Evaluating the appropriateness of management's determination of whether identified performance obligations meet the criteria for over-time revenue recognition, including whether certain products and services have alternative use.

Valuation and allocation of fair value to various elements of complex related party transactions

Critical Audit Matter Description

The strategic alliance between the Company and DSM Nutritional Products Ltd and its affiliates (collectively, DSM, a related party) started in May 2017 with an equity investment by DSM in Amyris, and has since been expanded with several significant product development collaborations. The Company's relationships and transactions with DSM, including the nature of, terms of, and business purposes, are complex and evolving.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management's conclusion on amount, timing and presentation of transactions with DSM, include the following, among others:

- We tested the effectiveness of controls over the Company's process for identifying, authorizing and approving, and accounting for and disclosing related party transactions.
- Evaluated whether Company management has properly identified, authorized and approved, accounted for, and disclosed its related parties and relationships and transactions with the Company's related parties.
- Inquired of the Audit Committee regarding their understanding of the Company's relationships and transactions with related parties that are significant to the Company and whether there are any concerns and the substance of such concerns regarding relationships or transactions with related parties.
- For each transaction that is required to either be accounted for and disclosed in the Company's consolidated financial statements, performed specific procedures, including, but not limited, to the following:
- Inspected the executed contract to test that the facts on which management's conclusions were reached were consistent with the actual terms and conditions of the contract.
- Evaluated the contract within the context of the five-step model prescribed by ASC 606, Revenue from Contracts with Customers, and evaluating whether management's conclusions were appropriate.
- Compared the transaction price to the consideration expected to be received from a third party based on current rights and obligations under the contracts and any modifications that were agreed upon with DSM.

- Tested the accuracy and completeness of the costs incurred to date for the performance obligation.
- Tested the mathematical accuracy of management's calculation of revenue for the performance obligation.

Valuation of freestanding and embedded derivatives and debt for which fair value accounting is elected

Critical Audit Matter Description

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
- Debt for which the Company elected fair value accounting.

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 methods of determining the fair value of embedded derivative liabilities and debt liabilities is based on a binomial model.

There is no current observable market for these types of derivatives and, as such, the Company determined the fair value of the freestanding instruments or embedded derivatives using the Black-Scholes-Merton option pricing model or a probability weighted discounted cash flow analysis measuring the fair value of the debt instrument both with and without the embedded feature.

A binomial lattice model was also used to determine if the convertible debt 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. The fair value models also include inputs related to stock price, discount yield, risk free rates, equity volatility, probability of principal repayment in cash or stock, and probability and timing of change in control.

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, generally, an increase in the Company's stock price, change of control probability, risk-adjusted yields term to maturity/conversion or stock price volatility increases the value of the derivative liability.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management's conclusion on the valuation of freestanding and embedded derivatives and debt for which fair value accounting is elected, included the following, among others:
- Assessed the Company's internal control over accounting for financial instruments and derivatives.
- A high degree of subjective auditor judgment was involved in evaluating certain inputs to the model used to determine the fair value of the various liabilities. We assessed methodologies and tested the significant assumptions and underlying data used by the Company.
- Considered management's policy of reviewing valuation methodologies, inputs and assumptions utilized by third-party pricing services.
- Assessed the historical accuracy of management's estimates by performing a sensitivity analyses of the significant assumptions to evaluate the changes in the fair value models resulting from changes in the assumptions. There is limited observable market information and the calculated fair value of such assets was sensitive to possible changes in these key inputs.
- We also used a valuation specialist to assist us in evaluating the Company's models, valuation methodology, and significant assumptions used in the fair value estimates.

Valuation of acquisitions

Critical Audit Matter Description

As disclosed in Note 12 to the consolidated financial statements, during 2021, the Company completed four acquisitions aggregating approximately $167.7 million. The transactions were accounted for as business combinations. In the acquisition of Olika Inc and Beauty Labs International, Ltd., the Company has recognized a liability for acquisition consideration that is contingent upon achieving certain performance targets. The Company determines the fair value of these arrangements, both as part of the initial purchase price allocation, and on an ongoing basis each reporting period until the arrangements are settled. As of December 31, 2021, the amount for acquisition-related contingent consideration was $64.8 million.

Auditing the Company's accounting for its acquisitions was complex due to the significant estimation uncertainty in the Company's determination of the fair value of identified intangible assets of $39.3 million, which principally consisted of trademarks and developed technology. The significant estimation uncertainty was primarily due to the sensitivity of the respective fair values to underlying assumptions about the future performance of the acquired business. The Company used a discounted cash flow model to measure the trademarks and developed technology intangible assets. The significant assumptions used to estimate the value of the intangible assets included the discount rates and certain assumptions that form the bases of the forecasted results, including revenue growth rates. The significance of the estimations used by management to determine the fair value of contingent consideration was primary due to the sensitivity of the respective fair values to the significant underlying assumptions. The significant assumptions include estimation of the probability and timing of payment, future revenue forecasts, and the appropriate discount rate based on the estimated timing of payments. These significant assumptions are forward looking and could be affected by future economic and market conditions.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management's conclusion on the valuation of acquisitions, included the following, among others:

- Tested the Company's controls over its accounting for acquisitions
- Read the purchase agreements, evaluated the significant assumptions and methods used in developing the fair value estimates, and tested the recognition of (1) the tangible assets acquired and liabilities assumed at fair value; (2) the identifiable intangible assets acquired at fair value; and (3) goodwill measured as a residual.
- Tested estimated fair value of intangible assets by performing audit procedures that included, among others, evaluating the Company's selection of the valuation methodology, evaluating the methods and significant assumptions used by the Company, and evaluating the completeness and accuracy of the underlying data supporting the significant assumptions and estimates. This included comparing the significant assumptions to current industry, market and economic trends. We involved our valuation professionals to assist in our evaluation of the methodology used by the Company and significant assumptions included in the fair value estimates.

/s/ Macias Gini & O'Connell LLP

We have served as the Company's auditor since 2019.

San Francisco, California
March 9, 2022

FORM 10-K

AMYRIS, INC.
CONSOLIDATED BALANCE SHEETS

December 31, (In thousands, except shares and per share amounts)	2021	2020
Assets		
Current assets:		
Cash and cash equivalents	$ 483,462	$ 30,152
Restricted cash	199	309
Accounts receivable, net of allowance of $945 and $137, respectively	37,074	32,846
Accounts receivable - related party, net of allowance of $0 and $0, respectively	5,667	12,110
Contract assets	4,227	4,178
Contract assets - related party	—	1,203
Inventories	75,070	42,862
Deferred cost of products sold - related party	—	9,801
Prepaid expenses and other current assets	33,513	13,103
Total current assets	639,212	146,564
Property, plant and equipment, net	72,835	32,875
Deferred cost of products sold, noncurrent - related party	—	9,939
Restricted cash, noncurrent	4,651	961
Recoverable taxes from Brazilian government entities	16,740	8,641
Right-of-use assets under financing leases, net	7,342	9,994
Right-of-use assets under operating leases, net	32,428	10,136
Goodwill	131,259	—
Intangible assets, net	39,265	—
Other assets	10,566	3,704
Total assets	$ 954,298	$ 222,814
Liabilities, Mezzanine Equity and Stockholders' Equity (Deficit)		
Current liabilities:		
Accounts payable	$ 79,666	$ 41,045
Accrued and other current liabilities	71,457	30,707
Financing lease liabilities	140	4,170
Operating lease liabilities	7,689	5,226
Contract liabilities	2,530	4,468
Debt, current portion (includes instrument measured at fair value of $0 and $53,387, respectively)	896	54,748

AMYRIS, INC.
CONSOLIDATED BALANCE SHEETS, Continued

December 31, (In thousands, except shares and per share amounts)	2021	2020
Related party debt, current portion (includes instrument measured at fair value of $107,427 and $0, respectively)	107,427	22,689
Total current liabilities	269,805	163,053
Long-term debt, net of current portion (includes instrument measured at fair value of $0 and $0, respectively)	309,061	26,170
Related party debt, net of current portion (includes instrument measured at fair value of $0 and $123,164, respectively)	—	159,452
Financing lease liabilities, net of current portion	61	—
Operating lease liabilities, net of current portion	19,829	9,732
Derivative liabilities	7,062	8,698
Acquisition-related contingent consideration (Note 3 and Note 12)	64,762	—
Other noncurrent liabilities	4,510	22,754
Total liabilities	675,090	389,859
Commitments and contingencies (Note 9)		
Mezzanine equity:		
Contingently redeemable common stock	5,000	5,000
Contingently redeemable noncontrolling interest	28,520	—
Stockholders' equity (deficit):		
Preferred stock - $0.0001 par value, 5,000,000 shares authorized as of December 31, 2021 and 2020; 0 shares issued and outstanding as of December 31, 2021 and 2020	—	—
Common stock - $0.0001 par value, 450,000,000 and 350,000,000 shares authorized as of December 31, 2021 and 2020, respectively; 308,899,906 and 244,951,446 shares issued and outstanding as of December 31, 2021 and 2020, respectively	31	24
Additional paid-in capital	2,656,838	1,957,224
Accumulated other comprehensive loss	(52,769)	(47,375)
Accumulated deficit	(2,357,661)	(2,086,692)
Total Amyris, Inc. stockholders' equity (deficit)	246,439	(176,819)
Noncontrolling interest	(751)	4,774
Total stockholders' equity (deficit)	245,688	(172,045)
Total liabilities, mezzanine equity and stockholders' equity (deficit)	$ 954,298	$ 222,814

See accompanying notes to consolidated financial statements.

FORM 10-K

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

Years Ended December 31, (In thousands, except shares and per share amounts)	2021	2020	2019
Revenue:			
Renewable products (includes related party revenue of $19,162, $986 and $56, respectively)	$ 149,703	$ 104,338	$ 59,872
Licenses and royalties, net (includes related party revenue of $149,612, $43,750 and $49,051, respectively)	173,812	50,991	54,043
Collaborations, grants and other (includes related party revenue of $6,000, $7,018 and $4,120, respectively)	18,302	17,808	38,642
Total revenue (includes related party revenue of $174,774, $51,754 and $53,227, respectively)	341,817	173,137	152,557
Cost and operating expenses:			
Cost of products sold	155,139	87,812	76,185
Research and development	94,289	71,676	71,460
Sales, general and administrative	257,811	137,071	126,586
Impairment	12,204	—	216
Total cost and operating expenses	519,443	296,559	274,447
Loss from operations	(177,626)	(123,422)	(121,890)
Other income (expense):			
Interest expense	(25,605)	(47,951)	(58,665)
Gain (loss) from change in fair value of derivative instruments	1,453	(11,362)	2,777
Loss from change in fair value of debt	(38,649)	(89,827)	(19,369)
Loss upon extinguishment of debt	(32,464)	(51,954)	(44,208)
Other income (expense), net	580	666	(783)
Total other expense, net	(94,685)	(200,428)	(120,248)
Loss before income taxes and loss from investment in affiliates	(272,311)	(323,850)	(242,138)
Provision for income taxes	8,114	(293)	(629)
Loss from investment in affiliates	(7,595)	(2,731)	—
Net loss	(271,792)	(326,874)	(242,767)
Loss (income) attributable to noncontrolling interest	823	(4,165)	—
Net loss attributable to Amyris, Inc.	(270,969)	(331,039)	(242,767)
Less: deemed dividend to preferred stockholders upon conversion of Series E preferred stock	—	(67,151)	—
Less: deemed dividend to preferred stockholder on issuance and modification of common stock warrants	—	—	(34,964)
Add: loss allocated to participating securities	507	15,879	7,380
Net loss attributable to Amyris, Inc. common stockholders	$ (270,462)	$ (382,311)	$ (270,351)

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS, Continued

Years Ended December 31, (In thousands, except shares and per share amounts)	2021	2020	2019
Denominator:			
Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, basic	292,343,431	203,598,673	101,370,632
Basic loss per share	$ (0.93)	$ (1.88)	$ (2.67)
Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, diluted	292,667,631	203,598,673	101,296,575
Diluted loss per share	$ (0.97)	$ (1.88)	$ (2.72)

See accompanying notes to consolidated financial statements.

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

Years Ended December 31, (In thousands)	2021	2020	2019
Comprehensive loss:			
Net loss	$(271,792)	$(326,874)	$(242,767)
Foreign currency translation adjustment	(5,394)	(3,571)	(461)
Total comprehensive loss	$(277,186)	$(330,445)	$(243,228)
Loss (income) attributable to noncontrolling interest	823	(4,165)	—
Comprehensive loss attributable to Amyris, Inc.	$(276,363)	$(334,610)	$(243,228)

See accompanying notes to consolidated financial statements.

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND MEZZANINE EQUITY

	Preferred Stock		Common Stock								
(In thousands, except number of shares)	Shares	Amount	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Noncontrolling Interest	Total Stockholders' Equity (Deficit)	Mezzanine Equity-Common Stock	Mezzanine Equity-Contingently Redeemable Noncontrolling Interest
Balance as of 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	—	—

FORM 10-K

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND MEZZANINE EQUITY, Continued

	Preferred Stock		Common Stock								
(In thousands, except number of shares)	Shares	Amount	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Noncontrolling Interest	Total Stockholders' Equity (Deficit)	Mezzanine Equity- Common Stock	Mezzanine Equity- Contingently Redeemable Noncontrolling Interest
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**	**$ —**
Issuance of preferred and common stock in private placements, net of issuance costs	72,156	—	36,098,894	3	170,034	—	—	—	170,037	—	—
Issuance of common stock upon exercise of warrants - related party	—	—	29,165,166	2	83,113	—	—	—	83,115	—	—
Issuance of preferred and common stock in private placements - related party, net of issuance costs	30,000	—	10,505,652	1	57,188	—	—	—	57,189	—	—
Issuance of common stock and warrants upon conversion of debt principal and accrued interest	—	—	6,337,594	1	21,259	—	—	—	21,260	—	—
Issuance of common stock upon conversion of debt principal and accrued interest, and extinguishment of related derivative liability	—	—	3,246,489	—	15,778	—	—	—	15,778	—	—
Issuance of common stock right warrant - related party	—	—	5,226,481	1	8,903	—	—	—	8,904	—	—
Issuance of common stock upon exercise of warrants	—	—	1,343,675	—	3,476	—	—	—	3,476	—	—

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND MEZZANINE EQUITY, Continued

(In thousands, except number of shares)	Preferred Stock Shares	Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Noncontrolling Interest	Total Stockholders' Equity (Deficit)	Mezzanine Equity-Common Stock	Mezzanine Equity-Contingently Redeemable Noncontrolling Interest
Issuance of common stock upon ESPP purchase	—	—	357,655	—	843	—	—	—	843	—	—
Issuance of common stock upon exercise of stock options	—	—	11,061	—	46	—	—	—	46	—	—
Issuance of common stock upon automatic conversion of Series E preferred stock	(102,156)	—	34,052,084	4	(4)	—	—	—	—	—	—
Issuance of common stock and payment of minimum employee taxes withheld upon net share settlement of restricted stock	—	—	2,227,654	—	(404)	—	—	—	(404)	—	—
Beneficial conversion feature related to issuance of Series E preferred stock	—	—	—	—	67,151	—	—	—	67,151	—	—
Deemed dividend upon conversion of Series E preferred stock into common stock	—	—	—	—	(67,151)	—	—	—	(67,151)	—	—
Exercise of common stock rights warrant - related party	—	—	—	—	15,000	—	—	—	15,000	—	—
Extinguishment of liability warrants to equity	—	—	—	—	11,750	—	—	—	11,750	—	—
Fair value of pre-delivery shares released to holder in connection with previous debt issuance	—	—	—	—	10,478	—	—	—	10,478	—	—
Modification of previously issued common stock warrants	—	—	—	—	2,353	—	—	—	2,353	—	—
Stock-based compensation	—	—	—	—	13,743	—	—	—	13,743	—	—
Return of pre-delivery shares previously issued to lenders	—	—	(1,363,636)	—	—	—	—	—	—	—	—
Net loss attributable to Amyris, Inc.	—	—	—	—	—	—	(331,039)	4,165	(326,874)	—	—
Foreign currency translation adjustment	—	—	—	—	—	(3,571)	—	—	(3,571)	—	—
Balance as of December 31, 2020	**8,280**	**$—**	**244,951,446**	**$24**	**$1,957,224**	**$(47,375)**	**$(2,086,692)**	**$4,774**	**$(172,045)**	**$5,000**	**$—**
Value of cash conversion feature in connection with issuance of convertible senior note	—	—	—	—	367,974	—	—	—	367,974	—	—

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND MEZZANINE EQUITY, Continued

	Preferred Stock		Common Stock								
(In thousands, except number of shares)	Shares	Amount	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Noncontrolling Interest	Total Stockholders' Equity (Deficit)	Mezzanine Equity-Common Stock	Mezzanine Equity-Contingently Redeemable Noncontrolling Interest
Issuance of common stock and payment of minimum employee taxes withheld upon net share settlement of restricted stock	—	—	3,073,652	—	(1,482)	—	—	—	(1,482)	—	—
Issuance of common stock as purchase consideration in business combinations	—	—	3,806,263	—	54,379	—	—	—	54,379	—	—
Issuance of common stock in public offering	—	—	8,805,345	1	130,792	—	—	—	130,793	—	—
Issuance of common stock upon conversion of debt principal	—	—	2,862,772	1	38,632	—	—	—	38,633	—	—
Issuance of common stock upon conversion of debt principal, net of return of 2,600,000 pre-delivery shares returned to Amyris	—	—	5,827,164	1	110,574	—	—	—	110,575	—	—
Issuance of common stock upon conversion of preferred stock	(8,280)	—	1,943,659	—	—	—	—	—	—	—	—
Issuance of common stock upon ESPP purchase	—	—	290,063	—	1,171	—	—	—	1,171	—	—
Issuance of common stock upon exercise of stock options	—	—	636,930	—	3,295	—	—	—	3,295	—	—
Issuance of common stock upon exercise of warrants	—	—	20,809,472	2	45,642	—	—	—	45,644	—	—
Issuance of common stock upon exercise of warrants - related party	—	—	15,893,140	2	10,838	—	—	—	10,840	—	—
Issuance of contingently redeemable noncontrolling interest	—	—	—	—	(14,520)	—	—	—	(14,520)	—	28,520
Premium paid for convertible note hedge call option	—	—	—	—	(81,075)	—	—	—	(81,075)	—	—
Stock-based compensation	—	—	—	—	33,394	—	—	—	33,394	—	—
Foreign currency translation adjustment	—	—	—	—	—	(5,394)	—	—	(5,394)	—	—
Distribution to noncontrolling interest	—	—	—	—	—	—	—	(4,702)	(4,702)	—	—
Net loss attributable to Amyris, Inc.	—	—	—	—	—	—	(270,969)	(823)	(271,792)	—	—
Balance as of December 31, 2021	**—**	**$—**	**308,899,906**	**$31**	**$2,656,838**	**$(52,769)**	**$(2,357,661)**	**$(751)**	**$245,688**	**$5,000**	**$28,520**

See accompanying notes to consolidated financial statements.

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

Years Ended December 31, (In thousands)	2021	2020	2019
Operating activities:			
Net loss	$(271,792)	$(326,874)	$(242,767)
Adjustments to reconcile net loss to net cash used in operating activities:			
(Gain) loss from change in fair value of derivative instruments	(1,453)	11,362	(2,777)
(Gain) loss on foreign currency exchange rates	683	(119)	(22)
Accretion of debt discount	9,536	3,829	11,665
Amortization of intangible assets	981	—	—
Amortization of right-of-use assets under operating leases	2,968	2,755	12,597
Contract asset credit loss reserve	—	8,342	—
Depreciation and amortization	8,745	9,371	4,581
Expense for warrants issued for covenant waivers	—	—	5,358
Impairment of deferred cost of products sold - related party	12,204	—	—
Impairment of property, plant and equipment	—	13	1,354
Loss from change in fair value of debt	38,649	89,827	19,369
Loss in equity-method investee	292	2,731	297
Loss on impairment of other assets	—	—	216
Loss upon conversion or extinguishment of debt	29,346	51,954	44,208
Non-cash interest expense in connection with modification of warrants	—	1,066	—
Non-cash interest expense in connection with release of pre-delivery shares to debt holder	—	10,478	—
Other	9	161	212
Stock-based compensation	33,394	13,743	12,554
Changes in assets and liabilities:			
Accounts receivable	2,395	(24,161)	(2,818)
Contract assets	1,154	(4,035)	(8,485)
Contract assets - related party	—	—	8,021
Inventories	(32,237)	(16,249)	(17,989)
Deferred cost of products sold - related party	7,536	(3,248)	(13,175)
Prepaid expenses and other assets	(36,291)	(443)	(8,064)
Accounts payable	37,389	(10,081)	23,748
Accrued and other liabilities	(9,924)	5,148	18,981
Lease liabilities	(12,700)	(4,438)	(17,125)

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS, Continued

Years Ended December 31, (In thousands)	2021	2020	2019
Contract liabilities	(2,217)	3,115	(6,872)
Net cash used in operating activities	(181,333)	(175,753)	(156,933)
Investing activities:			
Purchases of property, plant and equipment	(45,636)	(12,781)	(13,080)
Acquisitions, net of cash acquired	(18,462)	—	—
Net cash used in investing activities	(64,098)	(12,781)	(13,080)
Financing activities:			
Distribution to noncontrolling interest	(4,702)	—	(1,103)
Issuance costs incurred in connection with debt modification	(2,500)	—	—
Payment of minimum employee taxes withheld upon net share settlement of restricted stock units	(1,482)	(404)	(5,268)
Principal payments on debt	(76,980)	(51,959)	(328)
Principal payments on financing leases	(4,067)	(3,461)	(112,393)
Proceeds from capital contribution by noncontrolling interest	10,000	—	—
Proceeds from ESPP purchases	1,171	843	1,078
Proceeds from exercise of common stock rights warrant - related party	—	15,000	—
Proceeds from exercise of warrants	39,904	3,476	1
Proceeds from exercise of warrants - related party	16,580	28,348	—
Proceeds from exercises of common stock options	3,295	46	27
Proceeds from issuance of common stock in public offering, net of issuance costs	130,793	—	—
Proceeds from issuance of debt, net of issuance costs	671,025	15,599	189,175
Proceeds from issuance of preferred and common stock in private placements, net of issuance costs	—	170,037	14,221
Proceeds from issuance of preferred and common stock in private placements, net of issuance costs - related party	—	45,000	39,500
Purchase of capped calls related to convertible senior notes	(81,075)	—	—
Net cash provided by financing activities	701,962	222,525	124,910
Effect of exchange rate changes on cash, cash equivalents and restricted cash	359	(4,268)	(252)
Net increase (decrease) in cash, cash equivalents and restricted cash	456,890	29,723	(45,355)
Cash, cash equivalents and restricted cash at beginning of year	31,422	1,699	47,054
Cash, cash equivalents and restricted cash at end of year	$ 488,312	$ 31,422	$ 1,699

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS, Continued

Years Ended December 31, (In thousands)	2021	2020	2019
Reconciliation of cash, cash equivalents and restricted cash to the consolidated balance sheets			
Cash and cash equivalents	$483,462	$30,152	$ 270
Restricted cash, current	199	309	469
Restricted cash, noncurrent	4,651	961	960
Total cash, cash equivalents and restricted cash	$488,312	$31,422	$ 1,699
Supplemental disclosures of cash flow information:			
Cash paid for interest	$ 7,730	$16,609	$20,780
Supplemental disclosures of non-cash investing and financing activities:			
Accrued interest added to debt principal	$ —	$ 2,056	$ 7,292
Acquisition of additional interest in equity-method investee in exchange for payment obligation	$ —	$ —	$ 5,031
Acquisition of right-of-use assets under financing leases	$ 30	$ —	$ 7,436
Acquisition of right-of-use assets under operating leases	$ 25,395	$ —	$ 3,551
Cash conversion feature in connection with issuance of 2026 convertible senior notes	$367,974	$ —	$ —
Common stock issued as purchase consideration in business combinations	$ 56,418	$ —	$ —
Cumulative effect of change in accounting principle for ASU 2017-11	$ —	$ —	$41,043
Debt fair value adjustment in connection with debt issuance	$ —	$ —	$11,575
Derecognition of derivative liabilities to equity upon extinguishment of debt	$ 59	$ 6,461	$ —
Derecognition of derivative liabilities upon authorization of shares	$ —	$ 6,550	$ —
Derecognition of derivative liabilities upon exercise of warrants	$ —	$ 5,200	$ —
Exercise of common stock warrants in exchange for debt principal and interest reduction	$ —	$69,918	$ —
Fair value of embedded features in connection with private placement	$ —	$ 2,962	$ —
Fair value of pre-delivery shares in connection with debt issuance	$ —	$ —	$ 4,215
Fair value of warrants and embedded features recorded as debt discount in connection with debt issuances	$ —	$ 188	$ 237
Fair value of warrants and embedded features recorded as debt discount in connection with debt issuances - related party	$ —	$ 747	$ 1,954
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

AMYRIS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS, Continued

Years Ended December 31, (In thousands)	2021	2020	2019
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 insurance premium under note payable	$ —	$ —	$ 253
Issuance of common stock and warrants issued upon conversion of debt principal	$149,208	$ —	$ —
Issuance of common stock upon conversion of convertible notes and accrued interest	$ 42,520	$27,650	$62,860
Issuance of common stock upon exercise of common stock rights warrant in previous period - related party	$ —	$ 1	$ —
Lease liabilities recorded upon adoption of ASC 842	$ —	$ —	$33,552
Noncontrolling interest issued in subsidiary in exchange for settlement of other liabilities	$ 4,000	$ —	$ —
Reclassification of Additional paid-in capital to Mezzanine equity in connection with issuance of contingently redeemable noncontrolling interest in subsidiary	$ 14,520	$ —	$ —
Right-of-use assets under operating leases recorded upon adoption of ASC 842	$ —	$ —	$29,713
Unpaid property, plant and equipment balances in accounts payable and accrued liabilities at end of period	$ 4,833	$ 1,575	$ 2,576

See accompanying notes to consolidated financial statements.

Amyris, Inc.
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 high growth, biotechnology company at the forefront of delivering sustainable solutions that are better for people and the planet. The Company creates, manufactures and commercializes consumer products and ingredients. Currently, the largest driver of the Company's revenue is derived from marketing and selling Clean Beauty, Personal Care and Health & Wellness consumer products through direct-to-consumer ecommerce platforms and a growing network of retail partners. The Company also sells sustainable ingredients to sector leaders that serve Flavor & Fragrance (F&F), Nutrition, Food & Beverage, and Clean Beauty & Personal Care end markets. The Company's ingredients and consumer products are powered by the Company's fermentation-based Lab-to-Market™ technology platform, which leverages state-of-the-art machine learning, robotics and artificial intelligence, enabling the Company to rapidly bring new innovation to market.

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 financial 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. The Company accounts for its equity investments and joint venture using the equity method 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.

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

Acquisitions

When the Company acquires a controlling financial interest in an entity or group of assets that are determined to meet the definition of a business, the acquisition method described in ASC Topic 805, Business Combinations, is applied. The Company allocates the purchase consideration paid to acquire the business to the tangible and identifiable intangible assets acquired and liabilities assumed based on estimated fair values at the acquisition date, with the excess of purchase price over the estimated fair value of the net assets acquired recorded as goodwill. The determination of fair values of identifiable assets and liabilities requires significant judgments and estimates and the use of valuation techniques when market value is not readily available. If during the measurement period (a period not to exceed 12 months from the acquisition date) the Company receives additional information that existed as of the acquisition date but at the time of the original allocation described above was unknown, the Company makes the appropriate adjustments to the purchase price allocation in the reporting period in which the adjustments are identified.

Contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with ASC 805, "Contingencies", as appropriate, with the corresponding gain or loss being recognized in profit or loss.

See Note 12, "Acquisitions".

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.

Derivatives

Embedded derivatives that are required to be bifurcated from the underlying debt instrument (i.e., host) and free standing equity instruments that do not meet the derivative scope exception and equity classification criteria in ASC 815, "Derivatives and Hedging" are accounted for and valued as separate financial instruments. The Company has evaluated the terms and features of its convertible notes and free standing equity instruments requiring bifurcation and have accounted for these instruments at fair value, using the valuation techniques mentioned in the *Fair Value Measurements* section of this Note.

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 liabilities at fair value:
- Warrants to purchase common stock and freestanding and bifurcated derivatives in connection with certain debt and equity financings; and
- Foris Convertible Note (see Note 3, "Fair Value Measurement" and Note 4, "Debt", for which the Company elected the fair value option of 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, including the closing price of the Company common stock at each period end, used in these valuation models can have a significant impact on the estimated fair value of the Senior Convertible Notes, Foris Convertible Note and the Company's 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 Company's closing stock price at period end results in a decrease (increase) in estimated fair value of these instruments.

The changes during 2021, 2020 and 2019 in the fair values of the warrants and 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".

The fair value of debt instruments for which the Company has not elected fair value accounting, 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, the Company elected fair value accounting at the issue date in 2018, and for the Foris Convertible Note at the reissue date in June 2020, so the 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 and the Foris Convertible Note 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.

Goodwill

Goodwill represents the excess of the cost over the fair value of net assets acquired from the Company's business combinations. Goodwill is not subject to amortization and is assessed for impairment using fair value measurement techniques on an annual basis, during the fourth quarter, or more frequently if facts and circumstance warrant such a review. Goodwill is assigned to reporting units within the company. The Company has the option to first perform a qualitative assessment to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying value. However, the Company may elect to bypass the qualitative assessment and proceed directly to the quantitative impairment tests, whereby the fair value of a reporting unit is compared with its carrying amount, including goodwill. If the fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is not considered impaired. If the carrying amount of the reporting unit exceeds its estimated fair value, an impairment loss is recognized in an amount equal to the excess, up to the carrying value of the goodwill. No impairment of goodwill has occurred during the periods presented in these consolidated financial statements.

Intangible Assets

Intangible assets are comprised primarily of customer relationships, trademarks and trade names, developed technology, patents and other intellectual property acquired through business combinations. Intangible assets are recorded at cost less accumulated amortization and impairment losses, if any.

Intangible assets acquired in a business combination are measured at fair value at the acquisition date. Amortization periods of assets with finite lives are based on management's estimates at the date of acquisition. The fair value of intangibles assets is determined based on a complex series of judgments about future events and uncertainties and relies heavily on estimates and assumptions. We believe the assumptions are representative of those a market participant would use in estimating fair value. The fair values of the intangible assets were determined to be Level 3 under the fair value hierarchy. Level 3 inputs are unobservable inputs for an asset or liability. Unobservable inputs are used to measure fair value to the extent that observable inputs are not available thereby allowing for fair value estimates to be made in situations in which there is little, if any, market activity for an asset or liability at the measurement date. For more information on the fair value hierarchy, see Note 3 of the Notes to the Consolidated Financial Statements. We consider the period of expected cash flows and underlying data used to measure the fair value of the intangible assets when selecting a useful life. Intangible assets with finite useful lives are amortized using an accelerated amortization method reflecting the pattern in which the asset will be consumed if that pattern can be reliably determined. If that pattern cannot be reliably determined, a straight-line amortization method is utilized.

Intangible assets are evaluated periodically for impairment by taking into account events or changes in circumstances that may warrant revised estimates of useful lives or that indicate the carrying value of an asset group may not be recoverable. If this evaluation indicates that the value of the intangible asset may be impaired, an assessment is made of the recoverability of the net carrying value of the intangible asset over its remaining useful life. If this assessment indicates that the intangible asset is not recoverable, based on the estimated discounted future cash flows of the asset group over the estimated useful life, an impairment will be recorded to reduce the net carrying value of the related intangible asset to its fair value and may require an adjustment to the remaining amortization 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.

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.

Leases

The Company has operating leases primarily for administrative offices, retail space, laboratory equipment and other facilities and certain third-party manufacturing agreements deemed to contain an embedded lease. The operating leases have remaining terms that range from 1 year to 18 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 ROU assets under operating leases on the Company's consolidated balance sheets 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 "Lease liabilities" and "Lease liabilities, net of current portion" on the Company's consolidated balance sheets.

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.

Operating and Financing lease right-of-use assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. Because the rate implicit in the Company's lease agreements is typically 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 that may contain lease and non-lease components, which the Company has elected to treat as a single lease component.

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.

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.

Noncontrolling Interest and Contingently Redeemable 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 or as the primary beneficiary of a variable-interest entity (VIE) 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 or involvement 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. If a noncontrolling interest is contingently redeemable under circumstances that are not solely within the control of the Company, the contingently redeemable noncontrolling interest is presented in the balance sheet and statement of stockholders' equity (deficit) and mezzanine equity outside of permanent equity in accordance with SEC's Accounting Series Release 268, Presentation in Financial Statements of Redeemable Preferred Stocks (ASR 268).

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 (if any) 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,	2021	2020
Customer A (related party)	13%	27%
Customer B	16%	2%
Customer C	8%	17%
Customer D	**	13%

** Less than 10%

Customers representing 10% or greater of revenue were as follows:

Years Ended December 31,	Year First Customer	2021	2020	2019
Customer A (related party)	2017	51%	30%	35%
Customer C	2014**		10%	**
Customer E	2019**		**	12%

** Less than 10%

Revenue Recognition

The Company recognizes revenue from the sale of renewable products, licenses 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 the 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 10, "Revenue Recognition".

The Company recognizes revenue when control of the good or service has passed to the customer. The following indicators are evaluated in determining when control has passed to the customer: (i) the customer has legal title to the product, (ii) the Company has transferred physical possession of the product or service to the customer, (iii) the Company has a right to receive payment for the product or service, (iv) the customer absorbs the significant risks 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 from the customer. If the fair value of the goods or services 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 occurs when the renewable products leaves 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 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 or reprocess its ingredient 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 or reprocess its ingredient 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.

Collaborations, Grants and Other

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: (i) advance payments for the research and development services that will be performed, (ii) nonrefundable upfront license payments,

(iii) milestone payments to be received upon the achievement of the milestone events defined in the agreements, (iv) milestone payments at fixed intervals based on the passage of time, (v) payments for inventory manufactured under supply agreements upon the commercialization of the molecules, and (vi) 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 technical achievements that require customer acceptance. Revenue generated from the performance of services in accordance with these types of 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. Contract assets arise from services provided or completed performance obligations that are not yet billed to the customer.

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), an entity funded by the 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 reflects the production costs of renewable products, and includes 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. Inbound shipping costs for raw materials are included in cost of products sold.

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 sold asset 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 allocated to inventory and 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 impairment indicators and recoverability based on changes in 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 13, "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' equity (deficit). As of December 31, 2021 and 2020, cumulative translation adjustment, net of tax, was $52.8 million and $47.4 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. For the year ended December 31, 2021, the Company recorded a $0.6 million gain resulting from foreign exchange transactions. For the years ended December 31, 2020 and 2019, the Company recorded losses of $0.7 million and $0.2 million, respectively, resulting from foreign exchange transactions.

Accounting Standards or Updates Recently Adopted

During the year ended December 31, 2021 the Company adopted the following Accounting Standards Updates (ASUs):

Accounting for Income Taxes. In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes (Topic 740)*. The amendments in ASU 2019-12 simplify the accounting for income taxes by removing certain exceptions to the general principles in ASC Topic 740, Income Taxes. The amendments also improve consistent application of and simplify U.S. GAAP for other areas of ASC Topic 740 by clarifying and amending existing guidance. ASU 2019-12 became effective for the Company in the first quarter of fiscal year 2021. The adoption of this standard did not have any impact on the Company's condensed consolidated financial statements.

Equity Securities, Equity-method Investments and Certain Derivatives. 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. ASU 2020-01 became effective for the Company in the first quarter of 2021. The adoption of this standard did not have any impact on the Company's condensed consolidated financial statements.

Accounting Standards or Updates Not Yet Adopted

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. Because the Company met the SEC definition of a smaller reporting company when ASU 2016-13 was issued, this new accounting standard will be effective for the Company in the first quarter of 2023. The Company is currently evaluating the impact this standard will have on its consolidated financial statements and related disclosures.

Convertible Debt, and Derivatives and Hedging. In August 2020, the FASB issued ASU 2020-06, *Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, to improve financial reporting associated with accounting for convertible instruments and contracts in an entity's own equity. ASU 2020-06 will be effective for the Company in the first quarter of 2022. Adoption of this standard will, in connection with the Convertible Senior Notes that the Company issued in November 2021 (see Note 4, "Debt"), decrease stockholders' equity by $368 million, increase debt by the same amount, and increase the January 1, 2022 opening balance of retained earnings by $6.3 million for debt discount accretion expense that was recorded prior to adoption.

Business Combinations: Accounting for Contract Assets and Contract Liabilities from Contracts with Customers
In October 2021, the FASB issued ASU 2021-08, Business Combinations (Topic 805): *Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*. This update requires that an acquirer recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with Topic 606, *Revenue from Contracts with Customers*. This standard will be effective for the Company in the first quarter of 2023 and will be applied prospectively to business combinations occurring on or after the effective date of the

standard. Early adoption is permitted, including adoption in an interim period. The Company is currently evaluating the guidance and the impact on its consolidated financial statements and related disclosures.

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, 2021	$137	$808	$ —	$945
Year Ended December 31, 2020	$ 45	$ 92	$ —	$137
Year Ended December 31, 2019	$642	$110	$(707)	$ 45

Inventories

December 31, (In thousands)	2021	2020
Raw materials	$25,733	$11,800
Work in process	6,941	10,760
Finished goods	42,396	20,302
Total inventories	$75,070	$42,862

Deferred cost of products sold — related party

December 31, (In thousands)	2021	2020
Deferred cost of products sold - related party	$—	$ 9,801
Deferred cost of products sold, noncurrent - related party	—	9,939
Total	$—	$19,740

Amounts reported as “Deferred cost of products sold - related party” are in connection with an agreement with Koninklijke DSM N.V. (DSM) under which DSM provided dedicated manufacturing capacity for sweetener production at DSM’s Brotas, Brazil facility through December 2022. The deferred cost of products sold asset has been amortized to inventory and then 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, 2021, 2020 and 2019, the Company expensed $4.2 million, $2.3 million and $0.9 million, respectively, of the deferred cost of products sold asset. Inception-to-date amortization expense to cost of products sold through December 31, 2021 totaled $8.3 million. During the year ended December 31, 2021, the Company recorded a $12.2 million impairment charge to write down the remaining balance of Deferred cost of products sold - related party associated with the DSM agreement. Based on the construction progress and anticipated commissioning date of the new fermentation facility, the timing of forecasted demand for RebM, and management’s decision to switch production of RebM the new facility in the second half 2022, the Company concluded the deferred cost of products sold asset was not recoverable as of December 31, 2021. The impairment charge is included in the line captioned “Impairment” in the consolidated statements of operations.

Prepaid expenses and other current assets

December 31, (In thousands)	2021	2020
Prepayments, advances and deposits	$25,140	$ 6,637
Non-inventory production supplies	3,956	3,989
Recoverable taxes from Brazilian government entities	1,188	1,063
Other	3,229	1,414
Total prepaid expenses and other current assets	$33,513	$13,103

Property, plant and equipment, net

December 31, (In thousands)	2021	2020
Machinery and equipment	$ 51,855	$ 50,415
Leasehold improvements	45,780	45,197
Computers and software	9,174	6,741
Furniture and office equipment, vehicles and land	3,688	3,507
Construction in progress	48,032	7,250
Total property, plant and equipment, gross	158,529	113,110
Less: accumulated depreciation and amortization	(85,694)	(80,235)
Total property, plant and equipment, net	$ 72,835	$ 32,875

During the years ended December 31, 2021, 2020 and 2019, depreciation and amortization expense, which includes amortization of financing lease assets, was as follows:

Years Ended December 31, (In thousands)	2021	2020	2019
Depreciation and amortization	$8,745	$8,508	$5,358

Losses on disposal of property, plant and equipment were $0, $0.1 million and $0.9 million for the years ended December 31, 2021, 2020 and 2019, 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.

Goodwill

The changes in the carrying amount of goodwill were as follows:

Year ended December 31, (In thousands)	2021	2020
Beginning balance	$ —	$—
Acquisitions	133,025	—
Effect of currency translation adjustment	(1,766)	—
Ending balance	$131,259	$—

Additions to goodwill during the year ended December 31, 2021 were related to acquisitions completed during the year. See Note 12, “Acquisitions”.

Intangible Assets

During the year ended December 31, 2021, the Company recorded $40.2 million of intangible assets which related to trademarks and trade names, customer relationships, developed technology and patents as a result of the acquisitions completed during the year. See Note 12, "Acquisitions".

The following table summarizes the components of intangible assets (in thousands, except estimated useful life):

		December 31, 2021			December 31, 2020		
	Estimated Useful Life (in Years)	Gross Amount	Accumulated Amortization	Net	Gross Amount	Accumulated Amortization	Net
Trademarks and trade names	10	$11,484	$496	$10,988	$—	$—	$—
Customer relationships	5 - 16	8,197	267	7,930	—	—	—
Developed technology	12	19,962	200	19,762	—	—	—
Patents	17	600	15	585	—	—	—
		$40,243	$978	$39,265	$—	$—	$—

Amortization expense for intangible assets was approximately $1.0 million and $0 for the years ended December 31, 2021 and 2020 and is included in general and administrative expenses.

Total future amortization estimated as of December 31, 2021 is as follows (in thousands):

2022	$ 2,291
2023	3,559
2024	4,602
2025	4,804
2026	4,670
Thereafter	19,339
Total future amortization	$39,265

Leases

Operating Leases

The Company had $32.4 million and $10.1 million of right-of-use assets as of December 31, 2021 and 2020, respectively. Operating lease liabilities were $27.5 million and $15.0 million as of December 31, 2021 and 2020, respectively. For the years ended December 31, 2021, 2020 and 2019, the Company recorded $8.1 million, $7.7 million and $12.6 million, respectively of expense in connection with operating leases, of which $1.1 million, $1.2 million, and $7.0 million, respectively, were recorded to cost of products sold.

In October 2021, the Company entered into a 10-year manufacturing partnership agreement with Renfield Manufacturing, LLC (the "Renfield Manufacturing Agreement ") to provide manufacturing services and third-party logistics ("3PL") processes, including inventory management, warehousing, and fulfillment for certain of the Company's consumer product lines. Under the agreement, the Company will pay Renfield a series of fixed payments totaling $37.4 million over the 10-year period and variable payments for products manufactured and/or fulfilled by Renfield on a cost plus a markup basis. The Company also provided a $0.5 million letter of credit and guarantee to the lessor of the Renfield manufacturing facility, which extends through August 2032. If Renfield fails to perform under the facility lease, the Company can terminate the manufacturing agreement. The Company evaluated the key terms and provisions of the Renfield Manufacturing Agreement and concluded the fixed payments represented an embedded operating lease under ASC 842. As a result, the Company recorded a $20.1 million right of use asset that will be expensed to cost of goods sold over the 10-year manufacturing agreement, and a corresponding $12.0 million lease liability which represents the present value of the fixed payments made or to be made under the Renfield Manufacturing agreement.

Information related to the Company's right-of-use assets and related lease liabilities were as follows:

	2021	2020
Cash paid for amounts included in the measurements of operating lease liabilities	$ 7,791	$7,717
Right-of-use assets obtained in exchange for new operating lease obligations	$17,184	$ —
Weighted-average remaining lease term in years	7.7	2.5
Weighted-average discount rate	19.3%	18.0%

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. Accumulated amortization of assets under financing leases totaled $6.8 million and $4.6 million as of December 31, 2021 and 2020, respectively.

Maturities of Financing and Operating Leases

Maturities of lease liabilities as of December 31, 2021 were as follows:

Years Ending December 31, (In thousands)	Financing Leases	Operating Leases	Total Lease Obligations
2022	$ 150	$ 12,309	$ 12,459
2023	21	7,641	7,662
2024	21	4,287	4,308
2025	21	4,181	4,202
2026	17	4,191	4,208
Thereafter	—	20,020	20,020
Total future minimum payments	230	52,629	52,859
Less: amount representing interest	(29)	(25,111)	(25,140)
Present value of minimum lease payments	201	27,518	27,719
Less: current portion	(140)	(7,689)	(7,829)
Long-term portion	$ 61	$ 19,829	$ 19,890

Other assets

December 31, (In thousands)	2021	2020
Equity-method investments in affiliates	$ 9,443	$2,380
Deposits	129	128
Other	994	1,196
Total other assets	$10,566	$3,704

In December 2021, the Company entered into two joint venture agreements with ImmunityBio and Minerva, which initially increased the Equity method investment in affiliates by $14.0 million. See Note 7, "Consolidated Variable-interest Entities and Unconsolidated Investments".

Accrued and other current liabilities

December 31, (In thousands)	2021	2020
Beauty Labs deferred consideration payable[1]	$30,000	$ —
Accrued interest	9,572	9,327
Payroll and related expenses	9,151	8,230
Liability in connection with acquisition of equity-method investment	8,735	—
Asset retirement obligation[2]	3,336	3,041
Professional services	2,447	994
Contract termination fees	1,345	5,344
License fee payable	1,050	—
Tax-related liabilities	988	656
Ginkgo partnership payments obligation	—	878
Other	4,833	2,237
Total accrued and other current liabilities	$71,457	$30,707

(1) The Beauty Labs deferred consideration will be settled with Amyris common stock in February 2022. See Note 12, "Acquisitions", for additional information.
(2) 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.

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. The Company is obligated to make payment 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 payment obligation, which was deemed to be more readily determinable than the fair value of the Novvi partnership interest. The Company measured the fair value of this three-year unsecured financial liability using the Company's weighted average cost of capital of 29% which resulted in a present value of $5.0 million. The Company recorded the $5.0 million fair value of the investment and present value of financial obligation in other assets and other noncurrent liabilities and will accrete the $5.8 million difference between the $5.0 million present value of the liability and the $10.8 million payment obligation to interest expense under the effective interest method over the three-year payment term. For additional information regarding the Company's accounting this equity-method investment and the related asset value, see Note 1, "Basis of Presentation and Summary of Significant Accounting Policies" and Note 7, "Consolidated Variable-interest Entities and Unconsolidated Investments".

Other noncurrent liabilities

December 31, (In thousands)	2021	2020
Liability for unrecognized tax benefit	$4,296	$ 7,496
Contract liabilities, net of current portion	111	111
Ginkgo partnership payments, net of current portion	—	7,277
Liability in connection with acquisition of equity-method investment	—	6,771
Other	103	1,099
Total other noncurrent liabilities	$4,510	$22,754

In November 2021, the Company paid $10.6 million to settle the remaining Ginkgo Partnership payments and recorded a $1.7 million loss upon extinguishment of debt related to the unaccreted imputed interest discount.

3. Fair Value Measurement

Liabilities Measured and Recorded at Fair Value on a Recurring Basis

As of December 31, 2021 and 2020, 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)	2021				2020			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Liabilities								
Foris Convertible Note (LSA Amendment)	$—	$—	$107,427	$107,427	$—	$—	$123,164	$123,164
Senior Convertible Notes	—	—	—	—	—	—	53,387	53,387
Freestanding derivative instruments issued in connection with debt and equity instruments	—	—	7,062	7,062	—	—	8,451	8,451
Embedded derivatives bifurcated from debt instruments	—	—	—	—	—	—	247	247
Total liabilities measured and recorded at fair value	$—	$—	$114,489	$114,489	$—	$—	$185,249	$185,249

The Company did not hold any financial assets to be measured and recorded at fair value on a recurring basis as of December 31, 2021 and 2020. Also, there were no transfers between the levels during 2021 or 2020.

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 embedded derivative liabilities is described subsequently in this note. Market risk associated with embedded derivative liabilities relates to the potential reduction in fair value and negative impact to future earnings from a decrease in interest rates.

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 instruments that are 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".

Fair Value of Debt — Foris Convertible Note (LSA Amendment)

On June 1, 2020, the Company and 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, entered into an Amendment No. 1 to the Amended and Restated Foris LSA (LSA Amendment), pursuant to which, among other provisions, Foris has the option, in its sole discretion, to convert all or a portion of the secured indebtedness under the LSA Amendment, including accrued interest, into shares of Common Stock at a $3.00 conversion price (Conversion Option), which Conversion Option was approved by the Company's stockholders on August, 14, 2020. See Note 4, "Debt" for further information regarding the LSA Amendment and related extinguishment accounting treatment. The Company elected to account for the new debt issuance under the fair value option and recorded a $22.0 million loss upon extinguishment of the Foris LSA, representing the difference between the carrying value of the Foris LSA prior to the modification and the $72.1 million reacquisition price of the Foris LSA (which is the fair value of the LSA Amendment with the conversion option). The LSA Amendment also contains certain change in control embedded derivatives and a contingent beneficial conversion feature and management believes the fair value option best reflects the underlying economics of new convertible note. 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 Foris Convertible Note (LSA Amendment).

At December 31, 2021, the contractual outstanding principal of the Foris Convertible Note was $50.0 million and fair value was $107.4 million. The Company measured the fair value of the Foris Convertible Note using a binomial lattice model (which is discussed in further detail below) using the following inputs: (i) $5.41 stock price, (ii) 14% secured discount yield, (iii) 0.19% risk free interest rate (iv) 45% equity volatility and (v) 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. For the years ended December 31, 2021 and 2020, the Company recorded a gain of $15.7 million and a loss of $51.1 million, respectively, related to change in fair value of the Foris Convertible Note.

Fair Value of Debt — Senior Convertible Notes

During 2021, the Company repaid the Senior Convertible Notes in full through a combination of cash payments and conversion into common stock. For historical information about the Senior Convertible Notes, see the Company's Annual Report on Form 10-K for the Year Ended December 31, 2020, Part II, Item 8, Note 4, "Debt".

For the years ended December 31, 2021, 2020 and 2019, the Company recorded a $54.4 million loss, a $38.7 million loss and a $3.8 million gain from change in fair value of debt in connection with fair value remeasurement of the Senior Convertible Notes, as follows:

In thousands	
Fair value at November 14, 2019	$ 54,425
Less: gain from change in fair value	(3,801)
Equals: fair value at December 31, 2019	50,624
Less: principal repaid in cash	(17,950)
Less: principal converted into common stock	(18,030)
Add: loss from change in fair value	38,743
Fair value at December 31, 2020	53,387
Add: loss from change in fair value	54,386
Less: principal converted into common stock	(30,020)
Less: fair value adjustment extinguished upon conversion of debt principal	(77,753)
Fair value at December 31, 2021	$ —

Binomial Lattice Model

A binomial lattice model was used to determine whether the Foris Convertible Note and the Senior Convertible Notes (Debt Instruments) 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 Debt Instruments using the "with-and-without method", where the fair value of the Debt Instruments including the embedded and freestanding features is defined as the "with," and the fair value of the Debt Instruments excluding the embedded and freestanding features is defined as the "without." This method estimates the fair value of the Debt Instruments by looking at the difference in the values of the Debt Instruments with the embedded and freestanding derivatives and the fair value of the Debt Instruments without the embedded and freestanding features. The lattice model uses the stock price, conversion price, maturity date, risk-free interest rate, estimated stock volatility, estimated credit spread and other instrument-specific assumptions. The Company remeasures the fair value of the Debt Instruments 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.

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 instruments, either freestanding or embedded, measured at fair value using significant unobservable inputs (Level 3):

(In thousands)	**Derivative Liability**
Balance at December 31, 2020	$ 8,698
Change in fair value of derivative instruments	(1,452)
Derecognition on settlement or extinguishment	(184)
Balance at December 31, 2021	$ 7,062

Freestanding Derivative Instruments

During 2020, the Company entered into forbearance agreements with certain affiliates of the Schottenfeld Group LLC (Schottenfeld) related to certain defaults under the Schottenfeld Notes. In connection with entering into the forbearance agreements, the Company committed to issuing new warrants (the New Warrants) to the Lenders under certain contingent events for 1.9 million shares of common stock at a $2.87 purchase price and a two-year term. The contingent obligation to issue the New Warrants did not meet the derivative scope exception or equity classification criteria and was accounted for as a derivative liability. At December 31, 2021, the fair value of the contingently issuable New Warrants derivative liability was $7.1 million, and for the year ended December 31, 2021, the Company recorded a $1.4 million gain on change in fair value of derivative instruments in connection with the New Warrants.

Bifurcated Embedded Features in Debt Instruments

During 2019, the Company issued four debt instruments with embedded mandatory redemption features which were bifurcated from the debt host instruments and recorded at fair value as a derivative liability and debt discount. In 2020, the Company modified certain key terms in three of the four underlying debt instruments, resulting in a debt extinguishment of the three modified debt instruments and the recording of a new derivative liability at the modification date. During the year ended December 31, 2021, the four debt instruments were extinguished through payment in cash and conversion into common stock, which resulted in extinguishment of the derivative liability. For the year ended December 31, 2021, the Company recorded a $0.1 million gain on change in fair value derivative instruments and extinguished the remaining $0.2 million derivative liability when the associated debt instruments were extinguished.

FORM 10-K

Valuation Methodology and Approach to Measuring the Derivative Liabilities

The liabilities associated with the Company's freestanding and embedded derivatives outstanding at December 31, 2021 and 2020 represent the fair value of freestanding equity instruments and mandatory redemption features embedded in certain debt instruments. See Note 4, "Debt", and Note 6, "Stockholders' Equity (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, or a probability-weighted discounted cash flow analysis, measuring the fair value of the debt instrument both with and without the embedded feature, both of which are discussed in more detail below.

The Company uses the Black-Scholes-Merton option pricing model to determine the fair value of its liability classified warrants as of December 31, 2021 and 2020. Input assumptions for these freestanding instruments measured during the 12 months ended December 31, 2021 and 2020 were as follows:

Year ended December 31,	2021	2020
Fair value of common stock on valuation date	$5.41 - $19.10	$2.56 - $6.18
Exercise price of warrants	$2.87 - $2.87	$2.87 - $3.25
Expected volatility	107% - 114%	94% - 117%
Risk-free interest rate	0.16% - 0.73%	0.13% - 1.58%
Expected term in years	2.00 - 2.00	1.00 - 2.00
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 market-based assumptions and estimates used in valuing the embedded derivative liabilities during the applicable year include values in the following ranges/amounts (note that there were no embedded derivative liabilities at December 31, 2021):

Year ended December 31,	2021	2020
Risk-free interest rate	None	0.1% - 1.6%
Risk-adjusted discount yield	None	18.0% - 27.0%
Stock price volatility	None	96%
Probability of change in control		5.0%
Stock price	None	$2.56 - $6.18
Credit spread	None	17.9% - 36.8%
Estimated conversion dates	None	2022 - 2023

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 held constant, generally an increase in the Company’s stock price, change of control probability, risk-adjusted yield term to maturity/conversion or stock price volatility increases the value of the derivative liability.

Acquisition-related Contingent Consideration

The fair value of acquisition related contingent consideration (Earnout Payments) was determined using a Monte Carlo simulation to estimate the probability of the acquired business units achieving the relevant financial and operational milestones. The model results reflect the time value of money, non-performance risk within the required time frame and the risk due to uncertainty in the estimated cash flows. Key inputs to the Monte Carlo simulation for the Costa Brazil acquisition were: Revenue Risk Adjustment of 27%, Annual Revenue Volatility of 68%, EBITDA Risk Adjustment of 32%, and Annual EBITDA Volatility of 85%. Key inputs to the Monte Carlo simulations for the Olika, MG Empower and Beauty Labs acquisitions were: Revenue Risk Adjustment of 1.5% to 2.3% and Annual Revenue Volatility of 12.5% to 15%. A significant decrease or increase in an acquired business unit’s financial performance and the timing of such changes could materially decrease or increase the fair value of contingent consideration period over period. Contingent consideration is recorded in other liabilities in the accompanying consolidated balance sheets.

The fair value of contingent consideration is classified as Level 3. The changes in fair value are as follows:

(In thousands)	
Beginning balance January 1, 2021	$ —
Costa Brazil	8,100
MG Empower	4,071
Olika	13,463
Beauty Labs	39,128
Change in fair value of contingent consideration	—
Ending balance December 31, 2021	$64,762

Any change in the fair value of the contingent consideration liability is recognized in general and administrative expense and reflects the changes in the business unit's expected performance over the remaining earnout period and the Company's estimate of the likelihood of achieving the applicable operational milestones (see Note 12, "Acquisitions").

Assets and Liabilities Recorded at Carrying Value

The carrying amounts of certain financial instruments, such as cash equivalents, accounts receivable, prepaid expenses and other current assets, 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 of the Company's debt (the total amount presented on the balance sheet) at December 31, 2021 and at December 31, 2020, excluding the debt instruments recorded at fair value, was $310.0 million and $86.5 million, respectively. The fair value of such debt at December 31, 2021 and at December 31, 2020 was $328.0 million and $83.3 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.

4. Debt

	2021				2020			
(In thousands)	Principal	Unaccreted Debt (Discount) Premium	Fair Value Adjustment	Net	Principal	Unaccreted Debt (Discount) Premium	Fair Value Adjustment	Net
Convertible notes payable								
2026 convertible senior notes	$690,000	$(380,939)	$ —	$ 309,061	$ —	$ —	$ —	$ —
Senior convertible notes	—	—	—	—	30,020	—	23,367	53,387
	690,000	(380,939)	—	309,061	30,020	—	23,367	53,387
Related party convertible notes payable								
Foris convertible note	50,041	—	57,386	107,427	50,041	—	73,123	123,164
Loans payable and credit facilities								
Schottenfeld notes	—	—	—	—	12,500	(240)	—	12,260
Ginkgo note	—	—	—	—	12,000	—	—	12,000
Nikko notes	—	—	—	—	2,802	(759)	—	2,043
Other loans payable	896	—	—	896	1,227	—	—	1,227
	896	—	—	896	28,529	(999)	—	27,530
Related party loans payable								
DSM notes	—	—	—	—	33,000	(2,443)	—	30,557
Naxyris note	—	—	—	—	23,914	(493)	—	23,421
Foris $5M note	—	—	—	—	5,000	—	—	5,000
	—	—	—	—	61,914	(2,936)	—	58,978
Total debt	$740,937	$(380,939)	$57,386	417,384	$170,504	$(3,935)	$96,490	263,059
Less: current portion				(108,323)				(77,437)
Long-term debt, net of current portion				$ 309,061				$185,622

Future minimum payments under the debt agreements as of December 31, 2021 are as follows:

Years ending December 31 (In thousands)	Convertible Notes	Loans Payable and Credit Facilities	Related Party Convertible Notes	Total
2022	$ 10,321	$1,104	$ 59,578	$ 71,003
2023	10,350	—	—	10,350
2024	10,350	—	—	10,350
2025	10,350	—	—	10,350
2026	700,379	—	—	700,379
Thereafter	—	—	—	—
Total future minimum payments	741,750	1,104	59,578	802,432
Less: amount representing interest[1]	(51,750)	(208)	(9,537)	(61,495)
Less: future conversion of accrued interest to principal	—	—	—	—
Present value of minimum debt payments	690,000	896	50,041	740,937
Less: current portion of debt principal	—	(896)	(50,041)	(50,937)
Noncurrent portion of debt principal	$690,000	$ —	$ —	$690,000

[1] Excluding debt discount of $380.9 million that will be accreted to interest expense over the term of the debt.

Debt Instruments Extinguished During the Year Ended December 31, 2021:

During the year ended December 31, 2021, the Company extinguished the following debt instruments and the Ginkgo partnership liability:

Debt Instrument	How Extinguished	Principal Extinguished	Gain (Loss) Upon Extinguishment
Convertible notes payable			
Senior convertible notes	Conversion into common stock	$ 30,020	$ 2,619
Loans payable and credit facilities			
Schottenfeld notes	Conversion into common stock	12,500	(28,885)
Ginkgo note	Paid in cash	12,000	(9)
Nikko notes	Paid in cash	2,803	(680)
Other loans payable	Paid in cash	262	—
Related party loans payable			
DSM notes	Paid in cash	33,000	(2,110)
Naxyris note	Paid in cash	23,914	(1,715)
Foris $5M note	Paid in cash	5,000	(5)
Debt subtotal		119,499	(30,785)
Ginkgo partnership liability	Paid in cash	10,627	(1,679)
Grand total		$130,126	$(32,464)

2026 Convertible Senior Notes

On November 15, 2021, the Company issued $690 million principal of convertible senior notes (2026 Convertible Senior Notes) under an indenture agreement (the "Indenture"), between the Company and U.S. Bank National Association. The 2026 Convertible Senior Notes are senior, unsecured obligations of the Company. The notes bear interest at a rate of 1.50% per year, payable in cash semiannually in arrears on November 15 and May 15 of each year, beginning on May 15, 2022. The notes mature on November 15, 2026 unless earlier repurchased, redeemed

FORM 10-K

or converted in accordance with their terms prior to such date. The Indenture includes customary terms and covenants including certain events of default after which the notes may be due and payable immediately. The Company may not redeem the notes prior to November 20, 2024; however, on or after November 20, 2024, the Company may redeem for cash all or part of the notes, at its option, if certain conditions are met.

The notes are convertible into cash, shares of common stock, or a combination thereof, at the Company's election, at an initial conversion rate of 93.0579 shares of common stock per $1,000 principal amount of the notes, which is equivalent to an initial conversion price of approximately $10.75 per share of common stock, with a maximum conversion rate of 125.6281. The initial conversion rate and maximum conversion rate are subject to adjustment in accordance with the Indenture. Such conversion are subject to the satisfaction of certain conditions set forth below.

Holders of the notes who convert their notes in connection with a make-whole fundamental change (as defined in the Indenture) or in connection with any optional redemption are, under certain circumstances, entitled to an increase in the conversion rate. Additionally, in the event of a fundamental change (as defined in the Indenture), holders of the notes may require the Company to repurchase all or a portion of their notes at a price equal to 100% of the principal amount of notes, plus accrued and unpaid interest.

Holders of the notes may convert all or a portion of their notes at their option prior to June 15, 2026, in multiples of $1,000 principal amount, only under the following circumstances:

- during any calendar quarter commencing after the calendar quarter ending on December 31, 2021 (and only during such calendar quarter), if the last reported sale price of common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price of the notes on each applicable trading day;
- during the five business day period after any five consecutive trading day period in which the trading price per $1,000 principal amount of the notes for each day of that five day consecutive trading day period was less than 98% of the product of the last reported sale price of common stock and the conversion rate of the notes on such trading day;
- if the Company calls any or all of the notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date, but only with respect to notes called (or deemed called, pursuant to the Indenture) for redemption; or
- upon the occurrence of specified corporate events.

On or after June 15, 2026, a holder of the notes may convert all or any portion of its notes at any time prior to the second scheduled trading day immediately preceding the maturity date regardless of the foregoing conditions.

Net proceeds from the offering of the notes were $670.5 million after deducting the initial purchasers' discount and estimated offering expenses payable by the Company. The Company used approximately (i) $81.1 million of the net proceeds to pay the cost of a call option for the Company's common stock described in Note 6, "Stockholders' Equity (Deficit)", and (ii) $64.6 million of the net proceeds to repay certain of its existing senior debt instruments, including principal and accrued interest. The Company intends to use the remaining net proceeds for general corporate purposes, which may include, among other things, repaying indebtedness and expanding its current business through acquisitions of, or investments in, other businesses, products or technologies.

To account for the 2026 Convertible Senior Notes, the Company separated the 2026 Convertible Senior Notes into liability and equity components. The issuance-date fair value of the liability component was measured as the discounted present value of principal and interest payments, using the Company's current estimated borrowing interest rate for unsecured non-convertible debt. The fair value of the equity component, which represents the conversion option, was measured by deducting the fair value of the liability component from the $690 million gross proceeds. The difference between the gross proceeds and the fair value of the conversion option was recorded as a debt discount, which is accreted to interest expense using the effective interest method over the term of the notes.

Since the 2026 Convertible Senior Notes were not convertible as of December 31, 2021, the net carrying amount of the 2026 Convertible Senior Notes was classified as a long-term liability and the equity component was included in additional paid-in capital in the consolidated balance sheet as of December 31, 2021.

The following table sets forth the components of the 2026 Convertible Senior Notes as of December 31, 2021:

	(in thousands)
Liability component:	
Principal	$ 690,000
Less: value of cash conversion feature, net of accretion	(361,981)
Less: debt issuance costs, net of accretion	(18,958)
Net carrying amount	$ 309,061
Equity component recorded at issuance:	
Value of cash conversion feature	$ 367,974

The following table sets forth interest expense recognized related to the 2026 Convertible Senior Notes for the year ended December 31, 2021:

	(in thousands)
Accretion of debt discount	$6,306
Interest expense accrued	1,293
Total interest expense recognized	$7,599
Effective interest rate of the liability component	16.6%

Senior Convertible Notes

Exchange of Senior Convertible Notes

On January 14, 2020, the Company completed the exchange of the Company's $66 million Senior Convertible Notes (or the Prior Notes), pursuant to separate exchange agreements (the Exchange Agreements) with certain private investors (the Holders), for (i) new senior convertible notes in an aggregate principal amount of $51 million (the New Notes or Senior Convertible Notes), (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 (the Rights Shares), (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 (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 Company elected to account for the New Notes at fair value, as of the January 14, 2020 issuance date. Management believes that the fair value option better reflects the underlying economics of the Senior Convertible Notes, 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 New Notes.

Amendment to Senior Convertible Notes

On May 1, 2020, the Company and the holders of the Senior Convertible Notes entered into separate amendments to the New Notes (Note Amendment), pursuant to which the Company and the Holders agreed: (i) that interest payments would be due quarterly (as opposed to monthly), starting on August 1, 2020; (ii) to reduce the conversion price of the New Notes from $5.00 to $3.50; (iii) to reduce the redemption price with respect to optional redemptions by the Company prior to October 1, 2020 to 100%, prior to December 31, 2020 to 105% and to 110% thereafter (as opposed to 115%), of the amount being redeemed; and (iv) that an aggregate of 2,836,364 shares of Common Stock held by the Holders would not be considered as Pre-Delivery Shares (issued in connection with the November 15, 2019 Senior Convertible Notes Due 2022 and as defined in the New Notes), and that an aggregate of 1,363,636 Pre-Delivery Shares held by certain Holders would be promptly returned to the Company.

Further, in connection with the Note Amendment, the Company and the Holders entered into certain warrant amendment agreements pursuant to which (i) the exercise price of the warrants issued on January 14, 2020 in connection with the Exchange of the Senior Convertible Notes was reduced to $2.87 per share, from $3.25, with respect to an aggregate of 2,000,000 warrant shares; (ii) the exercise price of a warrant to purchase 960,225 shares of the Company's Common Stock issued to one of the Holders on May 10, 2019 was reduced to $2.87 per share, from $5.02, and the exercise term of such warrant was extended to January 31, 2022, from May 10, 2021; and (iii) the exercise term of a right to purchase 431,378 shares of the Company's Common Stock issued to one of the Holders on January 31, 2020 was extended to January 31, 2022, from January 31, 2021. See Note 6, "Stockholders' Equity (Deficit)" for more information regarding the accounting treatment of these warrant modifications.

The Company elected to account for the amended Senior Convertible Notes at fair value, as of the amendment date. Management believes that the fair value option better reflects the underlying economics of the Senior Convertible Notes, 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. For the year ended December 31, 2020, the Company recorded a loss of $38.7 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.

On February 4, 2021, the Company received a notice of conversion from HT Investments MA, LLC (HT) with respect to $20.0 million of its outstanding Senior Convertible Notes, pursuant to which the Company was required to issue 5.7 million shares of common stock per the conversion price stated in the agreement and cancelled the outstanding Note. Also, under the terms of the Senior Convertible Note, HT was required to return 2.6 million shares of common stock outstanding under the Pre-Delivery Shares provision once the Company had fully repaid the principal balance. HT fulfilled its obligation to return these shares in accordance with the contractual requirement, and as a result the Company net settled the $20 million principal conversion by issuing 3.1 million of incremental shares to HT. Upon conversion of the HT Senior Convertible Note, the Company recorded a $1.7 million gain upon extinguishment of debt related to accrued interest that was no longer due upon conversion.

On May 18 and May 26, 2021, the Company received notices of conversion from Blackwell Partners LLS—Series B (Blackwell) and Silverback Opportunistic Credit Master Fund Limited (Silverback) with respect to $10.0 million of their outstanding Senior Convertible Notes, pursuant to which the Company was required to issue 2.9 million shares of common stock per the conversion price stated in the agreement and cancelled the outstanding Notes. Upon conversion of the Blackwell and Silverback Senior Convertible Notes, the Company recorded a $0.9 million gain upon extinguishment of debt related to accrued interest that was no longer due upon conversion.

<u>*Foris Notes*</u>

Amendment No. 1 to Foris LSA (Foris Convertible Note) – Related Party

The Company has a convertible note payable to Foris Ventures, LLC (Foris) with a principal balance of $50.0 million at December 31, 2021. Foris is an entity affiliated with director John Doerr of Kleiner Perkins, a current stockholder, and an owner of greater than five percent of the Company's outstanding common stock. On June 1, 2020, the Company and Foris entered into Amendment No. 1 to the Foris LSA (LSA Amendment), pursuant to which: (i) the interest rate applicable to the then outstanding secured indebtedness (Secured Indebtedness) was amended from and after June 1, 2020 to a per annum rate of interest equal to 6.00% (previously 12.5%), (ii) the Company shall not be required to make any interest payments outstanding as of May 31, 2020 or accruing thereafter prior to July 1, 2022 (previously due monthly), (iii) the quarterly principal amortization payments were eliminated and all outstanding principal under the LSA Amendment became due on July 1, 2022, and (iv) Foris shall have the option, in its sole discretion, to convert all or portion of the Secured Indebtedness, including accrued interest, into shares of common stock at a $3.00 conversion price (Conversion Option).

The Company analyzed the before and after cash flows resulting from the LSA Amendment to determine whether these changes result in a modification or extinguishment of the Foris LSA. Based on the before and after cash flows, the change was significant. Consequently, the LSA Amendment was accounted for as a debt extinguishment and a new debt issuance. The Company elected to account for the new debt issuance under the fair value option and recorded a $22.0 million loss upon extinguishment of the Foris LSA, representing the difference between the carrying value of the Foris LSA prior to the modification and the $72.1 million reacquisition price of the Foris LSA (which is the fair value of the LSA Amendment with the conversion option). Management believes the fair value option best reflects the underlying economics of the LSA Amendment, which contains embedded derivatives, a conversion option requiring bifurcation and a beneficial conversion feature. 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 LSA Amendment (Foris Convertible Note).

Foris $5 Million Note – Related Party

On April 29, 2020, the Company borrowed $5.0 million from Foris, an entity affiliated with director John Doerr and which beneficially owns greater than 5% of the Company's outstanding common stock. The note is unsecured and accrues interest at 12% per annum. In November 2021, the Company repaid the note and associated accrued interest in full.

<u>*Naxyris LSA, as Amended – Related Party*</u>

On August 14, 2019, the Company, the Subsidiary Guarantors and Naxyris entered into a Loan and Security Agreement (the Naxyris Loan Agreement) to borrow $10.4 million and on October 28, 2019, 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. 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.

In November 2021, the Company repaid the August 2019 and October 2019 Naxyris Loans in full and recognized a $1.7 million loss upon extinguishment of debt, primarily comprised of a prepayment penalty.

<u>DSM Credit Agreements – Related Party</u>

DSM $25 Million Note

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. 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.

In March 2021, the Company entered into amendments (the March 2021 Amendments) to the $25 million Note and the $8 million Note (discussed below) that provided for (i) the prepayment of the $8 million Note, (ii) a $15 million partial prepayment of the $25 million Note and (iii) extension of the maturity date from December 31, 2021 to April 15, 2022 for the remaining $10 million principal balance under the $25 million Note, in exchange for a $2.5 million prepayment fee The Company repaid $23 million on March 31, 2021 to extinguish the $8 million Note and to partially repay the $25 million Note. The Company evaluated the March 2021 Amendments, and concluded the before and after cash flows resulting from the amendments were not significantly different and accounted for the amendments to the Notes as a debt modification. Consequently, the $2.5 million Prepayment Fee was recorded as an incremental debt discount to the remaining $10 million principal balance under the $25 million Note.

In November 2021, the Company repaid the remaining $10 million principal balance under the $25 million Note and recognized a $2.0 million loss upon extinguishment of debt, primarily comprised of unacccreted debt discount.

DSM $8 Million Note

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. 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 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.

In March 2021, the Company repaid the DSM $8 million note, as described above in “DSM $25 Million Note”.

Schottenfeld Notes

The Company, Schottenfeld Group LLC (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 Schottenfeld Warrants) to purchase shares (the Warrant Shares) of the Company's common stock. See Note 6, "Stockholders' Equity (Deficit)" for further information. Indebtedness under the September Notes totaled $12.5 million, accrued interest at 12% per annum and matures on January 1, 2023. Indebtedness under the November Notes totaled $7.9 million, accrued interest at 12% per annum and originally matured on January 15, 2020. On June 5, 2020, the Company repaid the past due November 2019 Notes totaling $7.9 million. In connection with the delayed payment of the November Notes, the Company entered into a forbearance agreement with the Lenders (Forbearance Agreement). Under the Forbearance Agreement, the Company agreed, among other things, to (i) issue new warrants upon the occurrence of certain contingent events and (ii) amend 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.

On March 1, 2021, the Company entered into an exchange and settlement agreement (Exchange Agreement) with Schottenfeld and certain other holders of the Schottenfeld Notes. Pursuant to the terms of the Exchange Agreement, the Company paid all accrued and unpaid interest on the $12.5 million principal balance outstanding under the Schottenfeld Notes, and issued 4.1 million net shares of common stock in a cashless exchange and cancellation of all amounts due and outstanding under the Notes and related loan documents and all warrants held by each of the holders of Schottenfeld Notes.

Upon conversion of the Schottenfeld note balance, the Company recorded a $28.9 million loss upon extinguishment of debt, which primarily represented the fair value of common shares issued in excess of debt principal extinguished.

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; and
- 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.

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.

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 2016 Ginkgo Collaboration

Agreement and the execution of the new Ginkgo Partnership Agreement. The November 2017 Ginkgo Note, as amended, accrued interest at 12.0% per annum (originally 10.5% prior to amendment), payable monthly, and had a maturity date of October 19, 2022. 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 August 10, 2020, the Company and Ginkgo entered into a Second Amendment to Promissory Note and Partnership Agreement (Second Amendment) to, among other things, (i) with respect to the Promissory Note, amend the interest payment frequency from monthly to quarterly beginning September 30, 2020 and reduce the interest rate from 12% to 9% beginning January 1, 2021, conditioned to the timely payment of interest on September 30, 2020 and December 31, 2020; and (ii) with respect to the Partnership Agreement, reduce the partnership payments frequency from monthly to quarterly, in an aggregate amount of $2.1 million, and to defer an aggregate of $9.8 million in partnership payments to the end of the agreement in October 2022 (the End of Term Payment).

In November 2021, the Company repaid in full both the $12.0 million Ginkgo Promissory Note and the $10.6 million of remaining Ginkgo Partnership payments. Extinguishment of the Ginkgo Partnership liability resulted in a $1.7 million loss upon extinguishment of debt, primarily comprised of a unaccreted imputed interest.

Nikko Notes

Nikko 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 year ended December 31, 2020, until the Nikko Note is fully repaid.

In July 2021, the Company repaid the remaining $2.5 million principal due under the Nikko Facility Note. At the repayment date, there was $0.7 million of unaccreted debt discount on the note, which resulted in a $0.7 million loss on extinguishment of debt for the year ended December 31, 2021.

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 Nikko 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. In November 2021, the Company repaid the Nikko Capex Note in full.

Letters of Credit

In October and December 2021, the Company entered into letter of credit agreements totaling $3.4 million under which it provided letters of credit to landlords as security deposits under commercial leases for offices in London, England and New York City and a third party warehouse facility in Reno, Nevada. The letters of credit are cash collateralized by certificates of deposit. At December 31, 2021, the Company had $3.7 million of restricted cash, noncurrent in connection with these arrangements.

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 cash collateralized by a certificate of deposit. At December 31, 2021 and 2020, the Company had $1.0 million of restricted cash, noncurrent in connection with this arrangement.

5. Mezzanine Equity

Gates Foundation

Mezzanine equity at December 31, 2021 and 2020 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 (SPA) 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 SPA includes customary representations, warranties and covenants of the parties.

In connection with the entry into the SPA, 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 nearing completion of the project. However, if the Company fails to complete the project 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%. Consequently, the Company has reflected the $5.0 million proceeds from the original SPA in Mezzanine Equity until the project is completed and the contingent repurchase obligation is resolved. As of December 31, 2021, the Company's remaining research and development expenditure obligation under this arrangement was $0.2 million.

Ingredion Contingently Redeemable Noncontrolling Interest in Subsidiary

On June 1, 2021, the Company entered into a Membership Interest Purchase Agreement (MIPA) with Ingredion Corporation (Ingredion) to purchase 31% of the member units in RealSweet LLC (RealSweet), a 100% owned Amyris, Inc. subsidiary. Total consideration was $28.5 million in the form of a $10 million cash payment, the exchange of a $4 million payable previously due to Ingredion and $14.5 million of manufacturing intellectual property rights. The terms of the MIPA provide both parties with put/call rights under certain circumstances, including the occurrence of either or both of the following: (i) a change in ownership of fifty percent (50%) or more of the voting shares of such Member; or (ii) a change in the right to appoint or remove a majority of the board of directors of such Member. The Company concluded this change in control provision was not solely within its control and Ingredion's contingently redeemable noncontrolling interest should be reflected outside of permanent equity in accordance with SEC's Accounting Series Release 268, Presentation in Financial Statements of Redeemable Preferred Stocks (ASR 268).

FORM 10-K

The redemption price of this common-share noncontrolling interest is considered to be at fair value on the redemption date. Ingredion's noncontrolling interest is not currently redeemable and the Company concluded a contingent redemption event is not probable to occur. The primary redemption contingency relates to a decrease in Ingredion's ownership percentage below 8.4%, which is not likely to occur given that capital transactions require the unanimous consent of each member. Consequently, the noncontrolling interest will not be subsequently remeasured to its redemption amount until such contingent event and the related redemption are probable to occur; however, the Company will continue to reflect the attribution of any losses and distribution of dividends to the noncontrolling interest each quarter in accordance with ASC 810-10. See Note 7. The Company recorded the $28.5 million noncontrolling interest in RealSweet as Mezzanine equity—contingently redeemable noncontrolling interest, which represents the value of Ingredion's 31% ownership interest in the net assets of the RealSweet subsidiary and recorded a $14.5 million decrease to additional paid in capital for the difference between the fair value of the consideration received and Ingredion's ownership interest claims against the net assets of the RealSweet subsidiary. Under the terms of the MIPA, Amyris, Inc. is funding the cash construction costs of the project, which are currently estimated to be $115 million. As of December 31, 2021, the Company has funded $52.8 million towards the project and has $38.4 million of contractual purchase commitments for construction related costs.

6. Stockholders' Equity (Deficit)

Primary Offering

On April 8, 2021, the Company entered into an underwriting agreement (the Underwriting Agreement) with J.P. Morgan Securities LLC and Cowen and Company, LLC (the Underwriters), pursuant to which the Company agreed to issue and sell 7,656,822, at a public offering price of $15.75 per share. Under the terms of the Underwriting Agreement, the Company granted the Underwriters a 30-day option to purchase up to an additional 1,148,523 shares of Common Stock from Amyris. The Underwriters exercised this option in full.

Net proceeds to the Company from the 8,805,345 new shares issued by the Company were $130.8 million (inclusive of the underwriters' option to purchase additional shares), after deducting underwriting discounts and commissions and estimated offering expenses payable by the Company.

Increase in Authorized Common Stock

On May 28, 2021, through a proxy vote at the Company's Annual Stockholder meeting, the Company's stockholders approved an increase in the Company's authorized common stock shares from 350 million to 450 million.

Shares Issuable under Convertible Notes

In connection with various debt transactions (see Note 4, "Debt"), the Company issued certain convertible notes that are convertible into shares of common stock as follows as of December 31, 2021, at the election of each debtholder:

	When Convertible	Number of Shares Instrument Is Convertible into as of December 31, 2021
2026 convertible senior notes	At any time from January 1, 2022 until November 15, 2026	86,683,389
Foris convertible note	At any time until July 1, 2022	16,680,334
		103,363,723

Call Option Related to 2026 Convertible Senior Notes

The Company entered into a capped call option transaction (the 2026 Call Option), using $81.1 million of the 2026 Convertible Senior Note proceeds to reacquire shares of its common stock upon conversion of the 2026 Convertible Senior Notes. The 2026 Call Option covers a portion of shares of common stock initially underlying the Notes up to a maximum of 20.9 million shares, subject to customary adjustments. The capped call option effectively increases the conversion price of the 2026 Convertible Senior Notes from $10.75 to $15.92, subject to certain adjustments under the terms of the 2026 Call Option, which represents a premium of 100% over the last reported sale price of the Company's common stock of $7.96 per share on November 9, 2021. The purpose of the capped call transaction is to reduce potential economic dilution to the Company's common stockholders upon any conversion of the 2026 Convertible Senior Notes and/or offset any cash payments the Company is required to make in excess of the principal amount of the 2026 Convertible Senior Notes, as the case may be, up to the 20.9 million share cap.

The 2026 Call Option will expire upon maturity of the 2026 Convertible Senior Notes and is only exercisable upon conversion of 2026 Convertible Senior Notes. The 2026 Call Option is a separate transaction and not part of the terms of the 2026 Convertible Senior Notes. Holders of the 2026 Convertible Senior Notes will not have any rights with respect to the 2026 Call Option. The common shares to be received under the 2026 Call Option are currently excluded from the calculation of diluted earnings per share as they are anti-dilutive.

The 2026 Call Option was evaluated under ASC 815, Derivatives and Hedging and was determined to be a freestanding equity instrument that met the derivative scope exception (indexation and equity classification criteria necessary to be recorded within equity) to be excluded from the derivative accounting guidance. Since the 2026 Call Option meets the derivative scope exception in ASC 815, the transaction is recorded in stockholders' equity and will not be remeasured each reporting period. The Company paid an aggregate cash amount of $81.1 million for the 2026 Call Option, which is recorded as a reduction to additional paid-in capital.

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, 2021:

Transaction	Year Issued	Expiration Date	Number Outstanding as of December 31, 2020	Additional Warrants Issued	Exercises	Expired	Weighted-average Exercise Price per Share of Warrants Exercised	Number Outstanding as of December 31, 2021	Exercise Price per Share as of December 31, 2021
High Trail / Silverback warrants	2020	July 10, 2022	3,000,000	—	(2,000,000)	—	$2.87	1,000,000	$3.25
2020 PIPE right shares	2020		3,484,321	—	(3,484,321)	—	$2.87	—	$ —
January 2020 warrant exercise right shares	2020	January 31, 2022	4,939,159	—	(4,507,781)	—	$2.87	431,378	$2.87
April 2019 PIPE warrants	2019		3,371,989	—	(3,371,989)	—	$4.93	—	$ —
September and November 2019 Investor Credit Agreement warrants	2019		5,183,551	—	(5,183,551)	—	$2.87	—	$ —
Naxyris LSA warrants	2019		2,000,000	—	(2,000,000)	—	$2.87	—	$ —
October 2019 Naxyris warrant	2019		2,000,000	—	(2,000,000)	—	$3.87	—	$ —

FORM 10-K

Transaction	Year Issued	Expiration Date	Number Outstanding as of December 31, 2020	Additional Warrants Issued	Exercises	Expired	Weighted-average Exercise Price per Share of Warrants Exercised	Number Outstanding as of December 31, 2021	Exercise Price per Share as of December 31, 2021
May-June 2019 6% Note Exchange warrants	2019		2,181,818	—	(2,181,818)	—	$3.06	—	$ —
May 2019 6.50% Note Exchange warrants	2019	January 31, 2022	960,225	—	—	—	nm	960,225	$2.87
July 2019 Wolverine warrant	2019		1,080,000	—	(1,080,000)	—	$2.87	—	$ —
May 2017 cash warrants	2017	July 10, 2022	6,078,156	—	(4,585,504)	—	$2.87	1,492,652	$2.87
August 2017 cash warrants	2017		3,968,116	—	(3,968,116)	—	$2.87	—	$ —
May 2017 dilution warrants	2017	July 10, 2022	3,085,893	—	(3,028,983)	—	$ —	56,910	$ —
August 2017 dilution warrants	2017		3,028,983	—	(3,028,983)	—	$ —	—	$ —
February 2016 related party private placement	2016		19,048	—	—	(19,048)	nm	—	$ —
July 2015 related party debt exchange	2015	July 29, 2025	58,690	—	—	—	nm	58,690	$0.15
Other	2011		1,406	—	—	(1,406)	nm	—	$ —
			44,441,355	—	(40,421,046)	(20,454)	$2.67	3,999,855	

[1] "nm" indicates not meaningful, as there were no exercises.

For information regarding warrants issued or exercised subsequent to December 31, 2021, see Note 16, "Subsequent Events".

Warrant Exercises

During the year ended December 31, 2021, upon the cash and cashless exercises of warrants to issue 40,421,046 shares of common stock, the Company issued 36,702,612 shares of its common stock at a weighted-average exercise price of $2.67 per share, and received cash proceeds of $56.5 million related to these exercises.

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. Consolidated Variable-interest Entities and Unconsolidated Investments

Consolidated Variable-interest Entities

Aprinnova, LLC (Aprinnova JV)

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. Under the Aprinnova JV Agreement, in the event of a merger, acquisition, sale or other similar reorganization, or a bankruptcy, dissolution, insolvency or other similar event, of the Company, on the one hand, or Nikko, on the other hand, the other member will have a right of first purchase with respect to such member's interest in the Aprinnova JV, at the fair market value of such interest, in the case of a merger, acquisition, sale or other similar reorganization, and at the lower of the fair market value or book value of such interest, in the case of a bankruptcy, dissolution, insolvency or other similar event.

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. Any future capital contributions will be made by the Company and Nikko on an equal (50%/50%) basis each time, unless otherwise mutually agreed. 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.

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)	2021	2020
Assets	$27,521	$24,114
Liabilities	$ 5,575	$ 1,490

The Aprinnova JV's assets and liabilities are primarily comprised of cash, accounts receivable, inventory, property, plant and equipment, and accounts payable, which are classified in the same categories in the Company's consolidated balance sheets.

The change in noncontrolling interest for the Aprinnova JV for the years ended December 31, 2021 and 2020 is as follows:

Year Ended December 31, (In thousands)	2021	2020
Balance at beginning of year	$ 5,319	$ 609
Income attributable to noncontrolling interest	5,649	4,710
Distribution to noncontrolling interest	(4,703)	—
Balance at end of year	$ 6,265	$5,319

RealSweet LLC

On June 1, 2021, the Company entered into a Membership Interest Purchase Agreement (MIPA) with Ingredion Corporation (Ingredion) to purchase 31% of the member units in RealSweet LLC (RealSweet), a 100% owned Amyris, Inc. subsidiary, which entity owns a new manufacturing facility under construction in Brazil. Total consideration was $28.5 million in the form of a $10 million cash payment, the exchange of a $4 million payable previously due to Ingredion and $14.5 million of manufacturing intellectual property rights. The terms of the MIPA provide both parties with put/call rights under certain circumstances, including the occurrence of either or both of the following: (i) a change in ownership of fifty percent (50%) or more of the voting shares of such Member; or (ii) a change in the right to appoint or remove a majority of the board of directors of such Member. The Company concluded this change in control provision was not solely within its control, and therefore Ingredion's contingently redeemable noncontrolling interest should be reflected outside of permanent equity in accordance with SEC's Accounting Series Release 268, Presentation in Financial Statements of Redeemable Preferred Stocks (ASR 268).

The Company recorded the $28.5 million noncontrolling interest in RealSweet as Mezzanine equity—contingently redeemable noncontrolling interest, which represents the value of Ingredion's 31% ownership interest in the net assets of the RealSweet subsidiary and recorded a $14.5 million decrease to additional paid in capital for the difference between the fair value of the consideration received and Ingredion's ownership interest claims against the net assets of the RealSweet subsidiary. See Note 5, "Mezzanine Equity" for information on the presentation of this noncontrolling interest in the balance sheet and statement of stockholders' equity net assets of the Company.

Under the terms of the MIPA, Amyris, Inc. is funding the construction costs of the project, which are currently estimated to be $115 million. As of December 31, 2021, the Company has funded $53 million towards the project and has $38 million of contractual purchase commitments for construction related costs.

The following presents the carrying amounts of the RealSweet JV's assets and liabilities included in the accompanying consolidated balance sheets. Assets presented below are restricted for settlement of the RealSweet JV's obligations and all liabilities presented below can only be settled using the RealSweet JV resources.

December 31, (In thousands)	2021
Assets	$58,340
Liabilities	$ 8,411

The RealSweet JV's assets and liabilities are primarily comprised of cash, property, plant and equipment, and accounts payable, which are classified in the same categories in the Company's consolidated balance sheets.

The change in contingently redeemable noncontrolling interest for the RealSweet JV for the year ended December 31, 2021 is as follows:

Year Ended December 31, (In thousands)	2021
Balance at beginning of year	$ —
Contribution by contingently redeemable noncontrolling interest	28,520
Balance at end of year	$28,520

Clean Beauty Collaborative, Inc.

In October 2020, the Company through its 100% owned subsidiary, Amyris Clean Beauty, Inc. entered into an agreement with Rosie Huntington-Whiteley, (RHW), model turned businesswoman and founder of beauty knowledge and commerce destination, RoseInc.com, for the commercialization of clean sustainable cosmetics under the Amyris umbrella using the creative design capabilities of RHW.

Clean Beauty Collaborative, Inc. (CBC) was formed as a Delaware Corporation. Amyris Clean Beauty, Inc. has the right to designate three Board of Directors and owns 60% of the issued and outstanding common shares and RHW has the right to designate two Board of Directors and owns 40% of the issued and outstanding common shares. The Company concluded the newly formed legal entity was a VIE due to insufficient equity at-risk and that the Company was the primary beneficiary through its controlling financial interest. Therefore, the Company consolidates the business activities of the new venture.

At the formation date, RHW assigned all rights and title to the Roseinc.com internet domain name and the Rose Inc. trademark to CBC; however, no financial assets were contributed by either party. Amyris Clean Beauty, Inc. committed to the initial funding and commercial launch of the new product line to the general public, which occurred in August 2021.

The following presents the carrying amounts of CBC assets and liabilities included in the accompanying consolidated balance sheets. Assets presented below are restricted for settlement of CBC obligations and all liabilities presented below can only be settled using the CBC resources.

December 31, (In thousands)	2021	2020
Assets	$10,817	$0
Liabilities	$ 5,132	$0

CBC assets and liabilities are primarily comprised of cash, accounts receivable, prepaid expenses, inventory and accounts payable, which are classified in the same categories in the Company's consolidated balance sheets.

The change in noncontrolling interest for CBC for the years ended December 31, 2021 and 2020 is as follows:

Year Ended December 31, (In thousands)	2021	2020
Balance at beginning of year	$ (538)	$ 0
Loss attributable to noncontrolling interest	(6,463)	(538)
Balance at end of year	$(7,001)	$(538)

Equity-method Investments

Novvi LLC

Novvi LLC (Novvi) is a U.S.-based joint venture among the Company, American Refining Group, Inc., Chevron U.S.A. Inc. and H&R Group US, Inc. Novvi's purpose is to develop, produce and commercialize base oils, additives and lubricants derived from Biofene for use in the automotive, commercial and industrial lubricants markets.

As of December 31, 2021, each of the investors held equity ownership in Novvi as follows:

Amyris, Inc.	17.6%
American Refining Group, Inc.	6.8%
Chevron U.S.A., Inc.	64.3%
H&R Group US, Inc.	11.3%
	100.0%

The Company accounts for its investment in Novvi under the equity method of accounting, having determined that (i) Novvi is a VIE, (ii) the Company is not Novvi's primary beneficiary, and (iii) the Company has the ability to exert significant influence over Novvi. Under the equity method, the Company's share of profits and losses and impairment charges on investments in affiliates are included in "Loss from investments in affiliates" in the consolidated statements of operations. 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 below zero. As of December 31, 2021 and 2020, the carrying amount of the Company's equity investment in Novvi was $2.7 million and $2.4 million, respectively.

AMF Low Carbon LLC

In December 2021, MF 92 Ventures LLC (Minerva), a Minerva Foods subsidiary, and Amyris entered into a Limited Liability Company Agreement governing the operation and management of AMF Low Carbon LLC (AMF Low Carbon), a Delaware limited liability company. The purpose of AMF Low Carbon is to create, develop, market and sell its products in the recombinant proteins segment, including individual animal proteins, vegetable proteins and other similar inputs and products. The products will be produced through a fermentation or brewing process of sugars derived from sugarcane plants. Concurrently, AMF Low Carbon and Amyris entered into an Intellectual Property License Agreement (License Agreement) and a Supply Agreement (Supply Agreement). The Company contributed a perpetual, exclusive, worldwide, royalty-free, non-sublicensable license to certain intellectual property to develop Heparin and products that extend the shelf life of beef in exchange for its 40% interest in AMF Low Carbon. Pursuant to the Supply Agreement, if and when product development is successful, Amyris will manufacture and sell the products to AMF Low Carbon in return for consideration on a cost-plus fixed margin basis. Minerva is obligated to fund $7.5 million in exchange for its 60% interest in AMF Low Carbon. AMF Low Carbon is managed by a Board of Directors consisting of five directors: two appointed by the Company and three appointed by Minerva.

The Company accounts for its investment in AMF Low Carbon under ASC 323, Equity Method and Joint Ventures using the equity method, having determined that (i) AMF Low Carbon is a VIE due to insufficient equity at risk, (ii) the Company is not the primary beneficiary of AMF Low Carbon due to lack of power to direct the activities that most significantly affect the AMF Low Carbon's economic performance, and (iii) the Company has the ability to exert significant influence over AMF Low Carbon through its equity ownership.

The initial carrying value of the equity method investment in AMF Low Carbon is the $5.0 million fair value of the equity interest received in exchange for the License Agreement which is being accounted for as non-cash consideration under ASC 606, Revenue from Contracts with Customers. The contribution of the intellectual property license to AMF Low Carbon is an arm's-length transaction within the scope of ASC 606 as the granting of the intellectual property license is an output of the Company's ordinary revenue activities. See Note 10, "Revenue Recognition" for information regarding the revenue recognition analysis and conclusion of the license and supply agreements.

Under the equity method, the Company records its share of AMF Low Carbon's profits or losses for each accounting period in "Loss from investments in affiliates" in the consolidated statements of operations and adjusts the investments in affiliates balance accordingly. Intra-entity profits and losses are eliminated until realized by AMF Low Carbon, in accordance with ASC 323-10-35-7. The Company recorded a loss from investments in affiliates of $2.0 million from inception through December 31, 2021. The loss allocated to the Company primarily relates to AMF Low Carbon's accounting for the non-cash consideration related to the License Agreement as in-process research and development, which resulted in the full value of Company's intellectual property contribution being expensed in the period ended December 31, 2021. However, the Company is not obligated to fund AMF Low Carbon's potential future losses and therefore the Company will not record equity-method losses that would result in the investment in AMF Low Carbon falling below zero. As of December 31, 2021, the carrying amount of the Company's equity investment in AMF Low Carbon was $3.0 million.

AccessBio LLC

In December 2021, ImmunityBio, Inc. and Amyris entered into a Limited Liability Company Agreement governing the operation and management of AccessBio LLC (AccessBio), a Delaware limited liability company. The purpose of AccessBio is the clinical development, manufacture and commercialization of therapeutic, prophylactic, or diagnostic agent, that contains or uses the RNA Vaccine Platform or any element of the RNA Vaccine for the prevention and/or treatment of SARS-CoV-2 (COVID-19) infection.

The Company contributed an intellectual property sublicense (Sublicense) in certain intellectual property rights granted to Amyris under a world-wide, royalty-bearing, exclusive, sublicensable license in the Infectious Disease Research Institute (IDRI) technology and a rvRNA SARS-CoV-2 vaccine developed in connection with a collaboration and license agreement between the Company and IDRI. The Sublicense contributed to AccessBio is a world-wide, royalty-bearing, exclusive license for the development and commercialization of the rvRNA SARS-CoV-2 vaccine. The Company received 50% equity interest in AccessBio with a fair value of $9.0 million in exchange for the Sublicense. ImmunityBio, Inc. and Amyris have an obligation to make cash contributions to AccessBio in the amount of $1.0 million each within 30 days after closing. AccessBio is managed by a Board of Directors consisting of four directors: two appointed by the Company and two appointed by ImmunityBio, Inc.

The Company accounts for its investment in AccessBio under ASC 323, Equity Method and Joint Ventures using the equity method, having determined that (i) AccessBio is a VIE due to insufficient equity at risk, (ii) the Company

FORM 10-K

is not AccessBio's primary beneficiary due to shared power over the key decisions that most significantly impact the AccessBio's economic performance and equal sharing in the economics of the VIE, and (iii) the Company has the ability to exert significant influence over AccessBio through its equity ownership.

The initial carrying value of the equity method investment in AccessBio is the $9.0 million fair value of the equity interest received in exchange for the Sublicense which is being accounted for as non-cash consideration under ASC 606, Revenue from Contracts with Customers. The contribution of the intellectual property license to AccessBio is an arm's-length transaction within the scope of ASC 606 as the granting of the intellectual property license is an output of the Company's ordinary revenue activities. See Note 10, "Revenue Recognition" for information regarding the revenue recognition analysis and conclusion of this license arrangement.

Under the equity method, the Company records its share of AccessBio's profits or losses for each accounting period in "Loss from investments in affiliates" in the consolidated statements of operations and adjusts the investment in affiliate balance accordingly. Intra-entity profits and losses are eliminated until realized by AccessBio in accordance with ASC 323-10-35-7. The Company recorded a loss on equity method investment of $5.3 million for the period ended December 31, 2021. The loss allocated to the Company primarily relates to AccessBio's accounting for the non-cash consideration related to the Sublicense as in-process research and development, which resulted in the full value of Company's intellectual property contribution being expensed in the period ended December 31, 2021. However, the Company is not obligated to fund AccessBio 's potential future losses, and therefore the Company will not record equity-method losses that would result in the investment in AccessBio falling below zero. As of December 31, 2021, the carrying amount of the Company's equity investment in AccessBio was $3.7 million.

8. 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, common stock warrants and contingently issuable common stock, using the treasury stock method or the as-converted method, as applicable. For the year ended December 31, 2020, 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 that year.

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, (In thousands, except shares and per share amounts)	2021	2020	2019
Numerator:			
Net loss attributable to Amyris, Inc.	$ (270,969)	$ (331,039)	$ (242,767)
Less: deemed dividend to preferred stockholders upon conversion of Series E preferred stock	—	(67,151)	—
Less: deemed dividend to preferred stockholder on issuance and modification of common stock warrants	—	—	(34,964)
Add: loss allocated to participating securities	507	15,879	7,380
Net loss attributable to Amyris, Inc. common stockholders, basic	(270,462)	(382,311)	(270,351)
Adjustment to loss allocated to participating securities	(507)	—	137
Gain from change in fair value of derivative instruments	(14,279)	—	(4,963)
Net loss attributable to Amyris, Inc. common stockholders, diluted	$ (285,248)	$ (382,311)	$ (275,177)
Denominator:			
Weighted-average shares of common stock outstanding used in computing net loss per share of common stock, basic	292,343,431	203,598,673	101,370,632
Basic loss per share	$ (0.93)	$ (1.88)	$ (2.67)
Weighted-average shares of common stock outstanding	292,343,431	203,598,673	101,370,632
Effect of dilutive common stock warrants	324,200	—	(74,057)
Weighted-average common stock equivalents used in computing net loss per share of common stock, diluted	292,667,631	203,598,673	101,296,575
Diluted loss per share	$ (0.97)	$ (1.88)	$ (2.72)

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,	2021	2020	2019
Period-end common stock warrants and warrant exercise rights	5,741,297	38,248,741	59,204,650
Convertible promissory notes[1]	86,683,389	22,061,759	13,381,238
Period-end stock options to purchase common stock	3,087,225	6,502,096	5,620,419
Period-end restricted stock units	13,731,320	7,043,909	5,782,651
Contingently issuable common shares	5,383,580	—	—
Period-end preferred shares on an as-converted basis	—	1,943,661	1,943,661
Total potentially dilutive securities excluded from computation of diluted net loss per share	114,626,811	75,800,166	85,932,619

[1] The potentially dilutive effect of convertible promissory notes was computed based on conversion ratios in effect as of the respective period end dates. 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.

FORM 10-K

9. 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, 2021 and 2020.

The Foris Convertible Note (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, the Company's international subsidiaries and the Company's ownership interests in joint ventures. Certain of the Company's subsidiaries have guaranteed the Company's obligations under the Foris Convertible Note.

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 the Company and our CEO, John G. Melo, and former CFO, 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, which was denied by the court on October 5, 2020. The Company filed its answer to the securities class action complaint on October 26, 2020. In early 2021, the parties attended court-ordered mediation, but as the case did not settle, the parties commenced discovery. On July 30, 2021, plaintiffs filed a motion seeking class certification; after briefing and argument, class certification was granted in part on December 8, 2021. On December 22, 2021, the Company filed a petition seeking interlocutory review of that order in the U.S. Court of Appeals for the Ninth Circuit, which was fully briefed on January 14, 2022. On February 4, 2022, the parties reached a tentative settlement of the securities class action, which requires the court's review and approval. If the settlement is approved by the court, the settlement amount will be paid from the insurance funds of the Company.

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 and naming 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. On November 3, 2020, Bonner re-filed its derivative complaint against the Company in San Mateo County Superior Court. The Company filed its demurrer to the complaint on January 13, 2021 and attended a preliminary hearing on April 22, 2021. An additional shareholder derivative complaint (Kimbrough v. Melo, et al.), substantially identical to the Bonner complaint, was filed on December 18, 2020 in the U.S. District Court for the Northern District of California. On February 19, 2021, the Company filed its motion to dismiss the Kimbrough complaint. In response, the Kimbrough complaint was dismissed in federal court on March 4, 2021 and refiled in state court on March 12, 2021. By agreement, the Kimbrough and Bonner complaints were consolidated for all purposes on April 9, 2021. The motion to dismiss was granted without prejudice on June 30, 2021. In response, on July 2, 2021, plaintiff Bonner sent a demand letter to the Company pursuant to Section 220 of the Delaware General Corporation Law demanding to inspect certain of the Company's books and records; as required, the Company responded within five days and produced the relevant materials on January 3, 2022. After obtaining an extension, Bonner amended his complaint on February 22, 2022. The Company believes the amended complaint lacks merit, and intends to continue to defend itself 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.

On September 10, 2020, LAVVAN, Inc. (Lavvan) filed a suit against the Company in the U.S. District Court for the Southern District of New York alleging breach of contract, patent infringement, and trade secret misappropriation in connection with that certain Research, Collaboration and License Agreement between Lavvan and the Company, dated March 18, 2019, as amended (Cannabinoid Agreement). The Company filed motions to compel arbitration or to dismiss on October 2, 2020. On October 30, Lavvan filed its opposition to the motions and the Company filed its reply to such opposition on November 13, 2020. The court denied the Company's motions on July 26, 2021, and the Company appealed the court's ruling regarding its motion to compel arbitration on July 27, 2021 and filed its appeal to the U.S. Court of Appeals for the Second Circuit on November 4, 2021. While the appellate briefing process was completed on January 19, 2022, the Court has not yet scheduled oral argument. The Company believes the suit lacks merit and intends to continue to defend itself vigorously. Given the early stage of these proceedings, it is not yet possible to reliably determine any potential liability that could result therefrom.

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.

10. 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)	2021 Renewable Products	2021 Licenses and Royalties	2021 Collaborations, Grants and Other	2021 TOTAL	2020 Renewable Products	2020 Licenses and Royalties	2020 Collaborations, Grants and Other	2020 TOTAL	2019 Renewable Products	2019 Licenses and Royalties	2019 Collaborations, Grants and Other	2019 TOTAL
Europe	$ 14,323	$149,800	$10,770	$174,893	$ 17,156	$50,991	$ 8,765	$ 76,912	$10,092	$54,043	$ 6,674	$ 70,809
North America	115,493	24,012	1,684	141,189	68,675	—	526	69,201	34,295	—	24,376	58,671
Asia	16,362	—	5,848	22,210	13,720	—	8,517	22,237	11,503	—	7,477	18,980
South America	1,907	—	—	1,907	4,105	—	—	4,105	3,612	—	115	3,727
Other	1,618	—	—	1,618	682	—	—	682	370	—	—	370
	$149,703	$173,812	$18,302	$341,817	$104,338	$50,991	$17,808	$173,137	$59,872	$54,043	$38,642	$152,557

The following tables present revenue by management revenue classification and by major product and service:

Years Ended December 31, (In thousands)	2021 Renewable Products	2021 Licenses and Royalties	2021 Collaborations, Grants and Other	2021 Total	2020 Renewable Products	2020 Licenses and Royalties	2020 Collaborations, Grants and Other	2020 Total	2019 Renewable Products	2019 Licenses and Royalties	2019 Collaborations, Grants and Other	2019 Total
Consumer	$ 91,055	$ —	$ —	$ 91,055	$ 51,627	$ —	$ —	$ 51,627	$17,374	$ —	$ —	$ 17,374
Ingredients	58,648	—	—	58,648	52,711	—	—	52,711	42,498	—	—	42,498
R&D and other services	—	173,812	18,302	192,114	—	50,991	17,808	68,799	—	54,043	38,642	92,685
	$149,703	$173,812	$18,302	$341,817	$104,338	$50,991	$17,808	$173,137	$59,872	$54,043	$38,642	$152,557

Significant Revenue Agreements

DSM Revenue Agreements

DSM License Agreement and Contract Assignment

On March 31, 2021, the Company and DSM entered into a license agreement and asset purchase agreement pursuant to which DSM acquired exclusive rights to the Company's Flavor and Fragrance (F&F) product portfolio. The Company granted DSM exclusive licenses covering specific intellectual property (F&F Intellectual Property License) of the Company and assigned the Company's rights and obligations under certain F&F ingredients supply agreements to DSM, in exchange for non-refundable upfront consideration totaling $150 million, and up to $235 million of contingent consideration if and when certain commercial milestones are achieved in each of the calendar years 2022 through 2024. DSM also acquired the Company's F&F finished goods inventory on-hand, unbilled accounts receivables and billed accounts receivable that were uncollected at closing. The Company and DSM also entered into a 15-year manufacturing agreement whereby the Company will manufacture certain F&F ingredients for DSM to supply to third parties.

The Company determined the licenses to be functional intellectual property licenses allowing DSM the immediate use of and benefit from the technology, and concluded the licenses and related assigned F&F ingredients supply agreements, the asset purchase agreement and the manufacturing agreement were revenue contracts within the scope of ASC 606. The Company identified three distinct performance obligations: (i) F&F license, (ii) finished goods inventory and (iii) receivables, that once delivered are satisfied at a point in time. The Company also concluded the additional contingent consideration and manufacturing supply agreement represent variable consideration that will be fully constrained until the commercial targets are probable of achievement and the products are manufactured and sold.

The Company allocated the $150 million transaction price to the three revenue performance obligations using the residual approach. The transaction price was first allocated to the transferred inventory and receivables at the stand-alone selling price for these performance obligations, and the residual consideration was allocated to the F&F intellectual property licenses:

- Finished goods inventory—$1.5 million
- Receivables—$4.9 million
- F&F intellectual property licenses—$143.6 million

The Company also concluded the F&F intellectual property licenses and the assigned F&F supply agreements had been fully delivered with no further performance obligation upon closing the transaction, and recognized license revenue of $143.6 million for the nine months ended September 30, 2021.

Due to the related party nature of the transaction with DSM, who is a significant shareholder with two members on the Company's board of directors, the Company performed a fair value assessment of the F&F intellectual property licenses under an income approach using a discounted cash flow model, in part with the assistance of a third-party valuation firm, and concluded the $143.6 million residual consideration received in exchange for the F&F intellectual property licenses approximated the fair value and stand-alone selling price of the F&F intellectual property licenses.

DSM Performance Agreement

In December 2017, the Company and DSM entered into a research and development services agreement (Performance Agreement), pursuant to which the Company would provide services to DSM relating to the further development of the technology underlying farnesene-related products in exchange for certain bonus payments in the event that specific performance metrics were achieved. If the Company did not meet the established metrics under the Performance Agreement, the Company would be required to pay $1.9 million to DSM. The Company accounted for the Performance Agreement under ASC 606 as a combined transaction with the Farnesene license granted to DSM in connection with the sale of the Brotas facility in December 2017. The Performance Agreement was allocated $1.2 million of the transaction price under a relative fair value allocation approach, and was recorded as a contract asset reflecting the Company's right to receive additional consideration and deferred revenue reflecting the probability of returning to DSM a portion of the cash received under the combined transaction. In the first quarter of 2021, the Company and DSM determined the performance metrics would not be reasonably achieved without the Company providing further research and development services and concluded the Performance Agreement and related activities should be terminated. As a result, As a result, the Company paid DSM $1.9 million, netted the $1.2 million allocated relative fair value of contract liability against the $1.2 million allocated relative fair value of contract asset, and expensed the incremental $1.9 million payment to research and development expense during the year ended December 31, 2021.

DSM Ingredients Collaboration

Pursuant to the September 2017 research and development collaboration agreement, as amended, the Company provides DSM with research and development services for specific field of use ingredients. The Company concluded the amended agreement contained a single performance obligation to provide research and development services delivered over time and that revenue recognition is based on an input measure of progress as labor hours are expended each quarter. DSM funds the development work with payments of $2.0 million quarterly from October 1, 2020 to September 30, 2021 for services singularly focused on achieving a certain fermentation yield and cost target over the twelve-month period. During the year ended December 31, 2021, the Company recognized $6.0 million of collaboration revenue in connection with the amended agreement.

DSM Developer License

In September 2021, the Company granted DSM a three-year license to perform research and development to improve and enhance certain technology underlying the Company's farnesene-related yeast strain in exchange for a $6.0 million license fee. The Company determined the license to be a functional intellectual property license allowing DSM the immediate use of and benefit from the technology and concluded the license agreement was a revenue contract within the scope of ASC 606, Revenue Contracts with Customers. The Company concluded the license agreement contained a single performance obligation to deliver the technology license, and that once delivered was satisfied at a point in time. The Company recorded the $6.0 million fee as license and royalty revenue in the year ended December 31, 2021.

PureCircle License and Supply Agreement

On June 1, 2021, the Company and PureCircle Limited (PureCircle), a subsidiary of Ingredion Incorporated, entered into an intellectual property license agreement under which the Company (i) granted certain intellectual property licenses to PureCircle to make, have made, commercialize and advance the development of sustainably sourced, zero-calorie, nature-based sweeteners and potentially other types of fermentation-based ingredients, as the exclusive global business-to-business commercialization partner for the Company's sugar reduction technology that includes fermented RebM, (ii) entered into a product supply and profit sharing agreement to provide manufacturing services and products to PureCircle, and (iii) assigned and transferred certain customer contracts to PureCircle related to the sale and distribution of RebM. Concurrent with the PureCircle license and product supply agreements, Ingredion purchased 31% of the membership interests in Amyris RealSweet LLC (RealSweet), a 100% owned subsidiary of the Company, which entity owns the new manufacturing facility under construction in Brazil. Ingredion's purchase of the contingently redeemable noncontrolling interest in RealSweet was deemed to be an equity transaction to be accounting for under ASC 810, Consolidation and ASR 268, Presentation in Financial Statements of Redeemable Preferred Stocks. See Note 5, "Mezzanine Equity" for further information. Under the PureCircle license agreement, the Company will continue to own and market its Purecane® consumer brand offering of tabletop and culinary sweetener products to consumers. As consideration for the license and product supply agreements, the Company received a $10 million license fee at closing and may receive additional payments in the aggregate of up to $35 million upon achievement of certain milestones related to RebM sales and manufacturing cost targets. Additionally, under the product supply and profit sharing agreement, the Company will earn revenues from product sales to PureCircle and a profit share from future product sales, including RebM, by PureCircle.

The Company determined the PureCircle license to be a functional intellectual property license allowing PureCircle the immediate use and benefit from the technology and concluded the license, the product supply and profit sharing agreement and the assigned contracts would be treated as a combined revenue contract within the scope of ASC 606, Revenue Contracts with Customers. The Company identified two distinct performance obligations in the revenue contract: (i) granting of the intellectual property license and (ii) the manufacturing and delivery of products under the product supply and profit sharing agreement. The functional intellectual property license is deemed to be satisfied at a point in time upon delivery of the license, and the product supply and profit-sharing performance obligation is considered variable consideration to be delivered over time if and when commercial production of the products begin. The Company also concluded the contingent milestone payments and the profit-sharing provisions represents variable consideration that is dependent upon future contingent events, and will be fully constrained from the transaction price until the commercial targets are probable of achievement and the future products are manufactured and then sold by PureCircle. The Company also concluded the intellectual property license had been fully delivered upon closing the transaction and recognized license revenue of $10 million in the year ended December 31, 2021.

Yifan Collaborations

From September 2018 to December 2019, the Company entered into a series of license and collaboration agreements, culminating in a master services agreement for research and development services, with a subsidiary of Yifan Pharmaceutical Co., Ltd. (Yifan), a leading Chinese pharmaceutical company. Upon execution of the master services agreement in December 2019 (the Collaboration Agreement), the Company evaluated and concluded that the series of agreements should be combined and accounted for as a single revenue contract under ASC 606, Revenue Contracts with Customers.

The Yifan Collaboration Agreement has a total transaction price of $21.0 million, 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 obligation. The Company concluded the Collaboration Agreement contained a single performance obligation of research and development services provided continuously over time. The Collaboration Agreement provides for upfront and periodic payments based on project milestones. The Company concluded the performance obligation is delivered continuously over time and that revenue recognition is based on an input measure of progress as labor hours are expended in the achievement of the performance obligations (i.e., proportional performance). Estimates of variable consideration are updated quarterly, with cumulative adjustments to revenue recorded as necessary. The Company recognized $5.8 million, $8.5 million and $6.1 million of collaboration revenue for the years ended December 31, 2021, 2020 and 2019, respectively, and $20.2 million of cumulative-to-date collaboration revenue. At December 31, 2021, the Company also recorded a $3.2 million contract asset in connection with the Collaboration Agreement.

AMF Low Carbon LLC License Agreement

On December 22, 2021, MF 92 Ventures LLC (Minerva), a Minerva Foods subsidiary, and Amyris entered into a Limited Liability Company Agreement governing the operation and management of AMF Low Carbon LLC (AMF Low Carbon), a Delaware limited liability company. See Note 7, "Consolidated Variable-interest Entities and Unconsolidated Investments" for further information. Concurrently, AMF Low Carbon and Amyris entered into an Intellectual Property License Agreement (License Agreement) and a Supply Agreement (Supply Agreement). Pursuant to the License Agreement, the Company contributed a perpetual, exclusive, worldwide, royalty-free, non-sublicensable license to certain intellectual property to develop Heparin and products that extend the shelf life of beef. The Company received 40% equity interest in AMF Low Carbon with a fair value of $5.0 million in exchange for the License Agreement. Pursuant to the Supply Agreement, if and when product development is successful, Amyris will manufacture and sell the products to AMF Low Carbon in return for consideration on a cost-plus fixed margin basis.

In accordance with ASC 323, Equity Method and Joint Ventures, the Company concluded the non-cash contribution of the intellectual property license to AMF Low Carbon is an arm's-length transaction within the scope of ASC 606, Revenue Contracts with Customers as the granting of the intellectual property license is an output of the Company's ordinary revenue activities. The Company determined the License Agreement to be a functional intellectual property license allowing AMF Low Carbon the immediate use and benefit from the technology and concluded the License Agreement is a revenue contract within the scope of ASC 606. The Company also determined the License Agreement and the Supply Agreement would be treated as a combined revenue contract within the scope of ASC 606. The Company identified two distinct performance obligations in the revenue contract: (i) delivery of the intellectual property license and (ii) manufacturing and delivery of products under the Supply Agreement. The performance obligation to deliver the functional intellectual property license is satisfied at a point in time upon delivery of the license at the closing of the transaction, and the product manufacturing and delivery performance obligation is considered variable consideration to be delivered over time, if and when commercial production of the products begins, and is fully constrained from the transaction price at inception. The Company recorded the $5.0 million non-cash fee as licenses and royalties revenue in the year ended December 31, 2021.

AccessBio LLC License

On December 31, 2021, ImmunityBio, Inc. and Amyris entered into a Limited Liability Company Agreement governing the operation and management of AccessBio LLC (AccessBio), a Delaware limited liability company. The purpose of AccessBio is the clinical development, manufacture and commercialization of therapeutic, prophylactic, or diagnostic agent, that contains or uses the RNA Vaccine Platform or any element of the RNA Vaccine for the prevention and/or treatment of SARS-CoV-2 (COVID-19) infection. See Note 7, "Consolidated Variable-interest Entities and Unconsolidated Investments" for further information. The Company contributed an intellectual property sublicense (Sublicense) to certain intellectual property rights granted to Amyris under a world-wide, royalty-bearing, exclusive, sublicensable license in the IDRI technology and a rvRNA SARS-CoV-2 vaccine developed in connection with a collaboration and license agreement between the Company and the Infectious Disease Research Institute (IDRI). The Sublicense contributed to AccessBio is a world-wide, royalty-bearing, exclusive license for the development and commercialization of the rvRNA SARS-CoV-2 vaccine. The Company received 50% equity interest in AccessBio with a fair value of $9.0 million in exchange for the Sublicense.

In accordance with ASC 323, Equity Method and Joint Ventures, the Company concluded the non-cash contribution of the intellectual property Sublicense to AccessBio is an arm's length transaction within the scope of ASC 606, Revenue Contracts with Customers as the granting of the intellectual property license is an output of the Company's ordinary revenue activities. The Company determined the Sublicense to be a functional intellectual property license allowing AccessBio the immediate use and benefit from the technology and that the license agreement is a revenue contract within the scope of ASC 606. The Company concluded the Sublicense contained a single performance obligation which was to deliver the technology sublicense at closing of the transaction, and that once delivered was satisfied at a point in time. The Company recorded the $9.0 million non-cash fee as licenses and royalties revenue in the year ended December 31, 2021.

Revenue in connection with Significant Revenue Agreements

In connection with the significant revenue agreements discussed above and others previously disclosed, the Company recognized revenue for the years ended December 31, 2021 and 2020 in connection with significant revenue agreements and from all other customers as follows:

	2021				2020				2019			
Years Ended December 31, (In thousands)	Renewable Products	Licenses and Royalties	Collaborations, Grants and Other	TOTAL	Renewable Products	Licenses and Royalties	Collaborations, Grants and Other	TOTAL	Renewable Products	Licenses and Royalties	Collaborations, Grants and Other	TOTAL
Revenue from significant revenue agreements with:												
DSM (related party)	$ 19,162	$149,612	$ 6,000	$174,774	$ 946	$43,750	$ 7,018	$ 51,714	$ 10	$49,051	$ 4,120	$ 53,181
Sephora	27,640	—	—	27,640	13,802	—	—	13,802	8,666	—	—	8,666
PureCircle	2,915	10,000	—	12,915	—	—	—	—	—	—	—	—
AccessBio	—	9,000	—	9,000	—	—	—	—	—	—	—	—
Yifan	—	—	5,848	5,848	—	—	8,468	8,468	—	—	6,100	6,100
AMF Low Carbon	—	5,000	—	5,000	—	—	—	—	—	—	—	—
Firmenich	671	188	3,528	4,387	9,967	7,241	594	17,802	8,591	4,992	1,413	14,996
Givaudan	210	—	—	210	10,081	—	—	10,081	7,477	—	1,500	8,977
DARPA	—	—	—	—	—	—	526	526	—	—	5,504	5,504
Lavvan	—	—	—	—	—	—	—	—	—	—	18,342	18,342
Subtotal revenue from significant revenue agreements	50,598	173,800	15,376	239,774	34,796	50,991	16,606	102,393	24,744	54,043	36,979	115,766
Revenue from all other customers	99,105	12	2,926	102,043	69,542	—	1,202	70,744	35,128	—	1,663	36,791
Total revenue from all customers	$149,703	$173,812	$18,302	$341,817	$104,338	$50,991	$17,808	$173,137	$59,872	$54,043	$38,642	$152,557

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, (In thousands)	2021	2020
Accounts receivable, net	$37,074	$32,846
Accounts receivable - related party, net	$ 5,667	$12,110
Contract assets	$ 4,227	$ 4,178
Contract assets - related party	$ —	$ 1,203
Contract liabilities	$ 2,530	$ 4,468
Contract liabilities, noncurrent(1)	$ 111	$ 111

(1) The balances in contract liabilities, noncurrent are included in other noncurrent liabilities on the consolidated balance sheets.

Contract liabilities, current decreased by $1.9 million at December 31, 2021 as result of satisfying certain performance obligations under collaboration agreements during the year ended December 31, 2021.

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, 2021.

(In thousands)	As of December 31, 2021
2022	$ 909
2023	143
2024	143
2025	143
2026 and thereafter	143
Total from all customers	$1,481

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.

11. Related Party Transactions

Related Party Debt

See Note 4, "Debt" for details of the Foris Convertible Note.

Related party debt was as follows:

(In thousands)	2021 Principal	2021 Unaccreted Debt (Discount) Premium	2021 Fair Value Adjustment	2021 Net	2020 Principal	2020 Unaccreted Debt (Discount) Premium	2020 Fair Value Adjustment	2020 Net
DSM notes	$—	$—	$ —	$ —	$33,000	$(2,443)	$ —	$30,557
Foris								
Foris convertible note	50,041	—	57,386	107,427	50,041	—	73,123	123,164
Foris promissory notes	—	—	—	—	5,000	—	—	5,000
	50,041	—	57,386	107,427	55,041	—	73,123	128,164
Naxyris note[(1)]	—	—	—	—	23,914	(493)	—	23,421
	$50,041	$—	$57,386	$107,427	$111,955	$(2,936)	$73,123	$182,142

(1) Naxyris was a related party at December 31, 2020, but ceased to be a related party upon Carole Piwnica's departure from the Company's Board of Directors on May 29, 2021.

Related Party Revenue

The Company recognized revenue from related parties and from all other customers as follows:

Years Ended December 31, (In thousands)	2021 Renewable Products	2021 Licenses and Royalties	2021 Collaborations, Grants and Other	2021 TOTAL	2020 Renewable Products	2020 Licenses and Royalties	2020 Collaborations, Grants and Other	2020 TOTAL	2019 Renewable Products	2019 Licenses and Royalties	2019 Collaborations, Grants and Other	2019 TOTAL
Revenue from related parties:												
DSM	$ 19,162	$149,612	$ 6,000	$174,774	$ 946	$43,750	$ 7,018	$ 51,714	$ 10	$49,051	$ 4,120	$ 53,181
Daling (affiliate of a Board member)	—	—	—	—	40	—	—	40	—	—	—	—
Total S.A.	—	—	—	—	—	—	—	—	46	—	—	46
Subtotal revenue from related parties	19,162	149,612	6,000	174,774	986	43,750	7,018	51,754	56	49,051	4,120	53,227
Revenue from all other customers	130,541	24,200	12,302	167,043	103,352	7,241	10,790	121,383	59,816	4,992	34,522	99,330
Total revenue from all customers	$149,703	$173,812	$18,302	$341,817	$104,338	$50,991	$17,808	$173,137	$59,872	$54,043	$38,642	$152,557

See Note 10, "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)	2021	2020
DSM	$5,667	$12,110

Related Party Accounts Payable and Accrued Liabilities

The following amounts due to DSM on the consolidated balance sheet at December 31, 2021 and December 31, 2020 were as follows, respectively:

- Accounts payable and accrued and other current liabilities of $5.2 million and $5.0 million at December 31, 2021 and December 31, 2020

Related Party DSM Transactions

The Company is party to the following significant agreements (and related amendments) with DSM:

Related to	Agreement	For Additional Information, See the Note Indicated
Debt	DSM Credit Agreement	4. Debt
Debt	2019 DSM Credit Agreement	4. Debt
Revenue	Farnesene Framework Agreement	10. Revenue Recognition
Revenue	DSM Collaboration Agreement	10. Revenue Recognition
Revenue	DSM Developer License	10. Revenue Recognition
Revenue	DSM License Agreement and Contract Assignment	10. Revenue Recognition
Revenue	DSM Performance Agreement	10. Revenue Recognition
Revenue	DSM Ingredients Collaboration Agreement	10. Revenue Recognition

12. Acquisitions

The purchase accounting for the net assets acquired, including goodwill, and the fair value of contingent consideration for the following acquisitions, is preliminarily recorded based on available information, incorporates management's best estimates, and is subject to change as additional information is obtained about the facts and circumstances that existed at the valuation date. The Company expects to finalize the fair values of the assets acquired and liabilities assumed during the one-year measurement period. The net assets acquired in each transaction are generally recorded at their estimated acquisition-date fair values, while transaction costs associated with the acquisition are expensed as incurred. These transactions were accounted for by the acquisition method, and accordingly, the results of operations were included in the Company's consolidated financial statements from their respective acquisition dates. Pro forma financial information is not presented, as amounts are not material to the Company's consolidated financial statements.

Costa Brazil

On May 7, 2021, the Company acquired 100% of the outstanding equity of Upland 1 LLC, also known as Costa Brazil, a privately held company providing consumer products made and inspired by pure, potent, enriching ingredients, sustainably sourced from the Brazilian Amazon. The acquisition allows the Company to further expand its consumer product offering and to leverage its science platform and fermentation technology to develop and scale Costa Brazil products.

Costa Brazil was acquired for total purchase consideration with a fair value of $11.6 million. The following table summarizes the components of the purchase consideration:

(In thousands)	Paid at Closing	Contingent Consideration	Total
Cash payments	$ 314	$ —	$ 314
Amyris common stock value	3,167	70,000	73,167
Fair value adjustments	—	(61,900)	(61,900)
Total consideration	$3,481	$ 8,100	$ 11,581

Total contractual contingent payments based on achieving 100% of the at-target measurement range from $0 to $70 million and are payable annually up to $10 million each year for six years after acquisition plus a one-time $10 million payment, upon the successful achievement of annual product revenue targets and certain cost milestones. The $70 million of at-target contingent consideration payments have been adjusted to fair value based on the passage of time and likelihood of achieving the relevant milestones (see Note 3, "Fair Value Measurement") and are recorded as other liabilities in the accompanying consolidated balance sheets. Allocation of the contingent consideration payments between short-term and long-term liabilities on the accompanying consolidated balance sheets is based on management's best estimates of when the relevant milestone will be achieved.

The $11.6 million total purchase consideration is allocated to tangible net assets, identifiable intangible assets related to trademarks, trade names, website domain names, other social media intellectual property and customer relationships based on the estimated fair value of each asset. The excess purchase price over the fair value of the net assets and identifiable intangible assets was recorded as goodwill. Goodwill represents the value of the acquired workforce, time to market and the synergies generated between the Company and Costa Brazil (see Note 2, "Balance Sheet Details"). Acquisition-related costs totaled $0.3 million and are included in general and administrative expense.

The following table summarizes the purchase price allocation:

(In thousands)	
Net tangible assets (liabilities)	$ (540)
Trademarks, trade names and other intellectual property	6,949
Customer relationships	1,158
Goodwill	4,014
Total consideration	$11,581

MG Empower Ltd.

On August 11, 2021, the Company entered into a Share Purchase Agreement with MG Empower Ltd. (MG Empower) and the securityholders of MG Empower for the acquisition of the outstanding shares of MG Empower, a U.K.-based privately held company providing influencer marketing and digital innovation services. Amyris' acquisition of MG Empower represents its continued investment in the future of marketing innovation by establishing a unique operating model that places digital technology and influencer marketing at the core of its consumer growth strategy.

MG Empower was acquired for total purchase consideration of $14.6 million, consisting of cash of $3.1 million, Amyris stock of $7.4 million and contingent consideration with a fair value of $4.1 million. The contingent consideration consists of three potential payments (the Earnout Payments) of up to $20.0 million in total that are based on achieving certain thresholds of revenue for the calendar years ending on December 31, 2022, December 31, 2023 and December 31, 2024. The portion of the Earnout Payments due to the nonemployee shareholders are treated as consideration transferred, the fair value of which in the amount of $4.1 million (see Note 3, "Fair Value Measurement") is recorded as other liabilities in the accompanying consolidated balance sheets. Allocation of the contingent consideration payments between short-term and long-term liabilities on the accompanying consolidated balance sheets is based on management's best estimates of when the relevant milestone will be achieved.

The following table summarizes the purchase price allocation:

(In thousands)	
Net tangible assets (liabilities)	$ (1,542)
Trademarks, trade names and other intellectual property	1,900
Customer relationships and influencer network database	2,600
Goodwill	11,613
Total consideration	$14,571

The allocated purchase price also included deferred tax liabilities attributable to the intangible assets, excluding goodwill, established at the acquisition date. No portion of goodwill is deductible for tax purposes.

Olika Inc.

On August 11, 2021, the Company entered into an Agreement and Plan of Merger and Reorganization with OLIKA Inc. (Olika), and the other parties thereto, and a Note Purchase Agreement with Olika and the selling stockholders party thereto, for the acquisition of Olika and the purchase of outstanding notes from certain Olika noteholders, respectively. Olika was a privately held company specializing in the clean wellness category, combining safe and effective ingredients and nature-inspired design packages. The acquisition of Olika furthers the Company's growth in clean health and beauty, and complements the Company's family of consumer brands.

Olika was acquired for total purchase consideration of $29.6 million, consisting of cash of $1.8 million, Amyris stock of $14.3 million and contingent consideration with a fair value of $13.5 million. The contingent consideration consists of i) two potential payments of $5.0 million each that are based on achieving certain thresholds of revenue for the calendar years ending on December 31, 2022 and December 31, 2023 (the Revenue Earnout Payments) and; ii) two potential payments of $2.5 million each that are based on continuing employment of certain key management during predetermined measurement periods (the Retention Earnout Payments). The Revenue Earnout Payments to all selling stockholders and the portion of the Retention Earnout Payments to the nonemployee shareholders totaling $15.0 million are treated as consideration transferred. The aggregate fair value of $13.8 million (see Note 3, "Fair Value Measurement") is recorded as other liabilities in the accompanying consolidated balance sheets. Allocation of the contingent consideration payments between short-term and long-term liabilities on the accompanying consolidated balance sheets is based on management's best estimates of when the relevant milestone will be achieved.

The following table summarizes the purchase price allocation:

(In thousands)	
Net tangible assets (liabilities)	$ (9)
Trademarks, trade names and other intellectual property	1,500
Customer relationships	4,500
Patents	600
Goodwill	23,005
Total consideration	$29,596

The allocated purchase price also included deferred tax liabilities attributable to the intangible assets, excluding goodwill, established at the acquisition date. No portion of goodwill is deductible for tax purposes.

Beauty Labs International, Ltd.

On August 31, 2021, the Company entered into a Share Purchase Agreement with Beauty Labs International Limited (Beauty Labs) and the shareholders and warrant holders of Beauty Labs as set forth therein, and an Option Cancellation Agreement with Beauty Labs and the option holders of Beauty Labs as set forth therein for the acquisition of the outstanding shares of Beauty Labs and the cancellation of outstanding Beauty Labs warrants and stock options, respectively. Beauty Labs is a U.K.-based data sciences and machine learning technology company that has developed one of the leading consumer applications for "try before you buy" color cosmetics. The acquisition of Beauty Labs accelerates the Company's growth and market leadership in clean beauty by adding digital innovation, machine learning and data science to further enhance the consumer experience of its family of consumer brands.

Beauty Labs was acquired for total purchase consideration of $111.9 million, consisting of cash of $13.3 million, Amyris stock of $59.5 million (including deferred stock consideration of $30 million payable within six months after the closing date) and contingent consideration with a fair value of $39.1 million. The contingent consideration consists of two potential payments that are based on future revenue of up to $31.3 million each, with additional payments due in case of overperformance (together, the Earnout Payments) for the calendar years ending on December 31, 2022 and December 31, 2023. The portion of the Earnout Payments due to the nonemployee shareholders are treated as consideration transferred, the fair value of which in the amount of $39.1 million (see Note 3, "Fair Value Measurement") is recorded as other liabilities in the accompanying consolidated balance sheets. Allocation of the contingent consideration payments between short-term and long-term liabilities on the accompanying consolidated balance sheets is based on management's best estimates of when the relevant milestone will be achieved.

The following table summarizes the purchase price allocation:

(In thousands)	
Net tangible assets (liabilities)	$ (3,948)
Trademarks, trade names and other intellectual property	1,200
Developed technology	20,300
Goodwill	94,393
Total consideration	$111,945

The allocated purchase price also included deferred tax liabilities attributable to the intangible assets, excluding goodwill, established at the acquisition date. No portion of goodwill is deductible for tax purposes.

13. 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)	2021	2020	2019
Cost of products sold	$ 295	$ 0	$ 0
Research and development	5,591	3,871	2,900
Sales, general and administrative	27,507	9,872	9,654
Total stock-based compensation expense	$33,393	$13,743	$12,554

Plans

2020 Equity Incentive Plan

On June 22, 2020 the Company's 2020 Equity Incentive Plan (2020 Equity Plan) became effective and will terminate in 2030. The 2020 Equity Plan succeeded the 2010 Equity Plan (which provided terms and conditions similar to those governing the 2020 Equity Plan) and provides for the grant of incentive stock options (ISOs) intended to qualify for favorable tax treatment under Section 422 of the U.S. Internal Revenue Code for their recipients, non-statutory stock options (NSOs), restricted stock awards, stock bonuses, stock appreciation rights, restricted stock units and performance awards. ISOs may be granted only to Company employees or employees of its subsidiaries and affiliates. NSOs may be granted to eligible Company employees, consultants and directors or any of the Company's parent, subsidiaries or affiliates. The Company is able to issue up to 30,000,000 shares pursuant to the grant of ISOs under the 2020 Equity Plan. The Leadership, Development, Inclusion, and Compensation Committee of the Board of Directors (LDICC) determines the terms of each option award, provided that ISOs are subject to statutory limitations. The LDICC 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 the Company's stock on the option grant date) of the fair market value of the Company's common stock on the date of grant. Options granted under the 2020 Equity Plan vest at the rate specified by the LDICC and such vesting schedule is set forth in the stock option agreement to which such stock option grant relates. Generally, the LDICC 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).

On November 16, 2021, the LDICC approved the expansion of 2020 EIP to cover employees in the United Kingdom and Portugal, including (i) the adoption of the 2021 United Kingdom Sub Plan under the EIP and (ii) the amendment of the forms of RSU and stock option award agreements to include specific provisions applicable to potential participants based in the United Kingdom and Portugal.

As of December 31, 2021, options were outstanding to purchase 3,087,225 shares of the Company's common stock granted under the 2020 and 2010 Equity Plans, with weighted-average exercise price per share of $9.91. In addition, as of December 31, 2021, restricted stock units representing the right to receive 13,731,320 shares of the Company's common stock granted under the 2020 and 2010 Equity Plans were outstanding. As of December 31, 2021, 13,304,454 shares of the Company's common stock remained available for future awards that may be granted under the 2020 Equity Plan. Upon the effective date of the 2020 Equity Plan, the Company no longer has shares available for issuance under the 2010 Equity Plan.

The number of shares reserved for issuance under the 2020 Equity Plan increases automatically on January 1 of each year starting with January 1, 2021, 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 LDICC retains the discretion to reduce the amount of the increase in any particular year.

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 LDICC 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. In May 2021, shareholders approved certain amendments to the 2010 ESPP, including to extend the term of the 2010 ESPP for another 10 years (otherwise the 2010 ESPP would have expired on November 15, 2021), increase the number of shares authorized for issuance by 800,000 shares, and extend the annual automatic increase (or evergreen) provision by 9 years. No more than 2,466,666 shares of the Company's common stock may be issued under the amended and restated 2010 ESPP and no other shares may be added to this plan without the approval of the Company's stockholders.

Evergreen Shares for 2020 Equity Incentive Plan and 2010 Employee Stock Purchase Plan

In March 2021, the Board approved increases to the number of shares available for issuance under the Company's 2020 Equity Incentive Plan (the 2020 Equity Plan) and 2010 Employee Stock Purchase Plan (the 2010 ESPP).

The increase in shares in connection with the 2020 Equity Plan represented an automatic annual increase in the number of shares available for grant and issuance under the 2020 Equity Plan of 12,247,572 shares (Evergreen Shares). This increase was equal to approximately 5.0% of the 244,951,446 total outstanding shares of the Company's common stock as of December 31, 2020. This automatic increase was effective as of January 1, 2021.

The increase in shares in connection with the 2010 ESPP represented an automatic annual increase in the number of shares reserved for issuance of 42,077 shares, which represents the remaining allowable under the existing 1,666,666 maximum limit for share issuance under the 2010 ESPP. This automatic increase was effective as of January 1, 2021.

Performance-based Stock Units

In May 2021, the Company's chief operating officer received performance-based restricted stock units (the COO PSUs) with a per share grant date fair value of $13.39. COO PSUs are equity awards with the final number of restricted stock units that may vest determined based on the Company's performance against pre-established performance metrics that are related to the completed construction and the successful scaling, commissioning and transitioning of new manufacturing facilities, and the successful launching of new brands. The performance metrics are measured from the grant date through December 31, 2022. The COO PSUs vest in six tranches contingent upon the achievement of both operational performance metrics and the chief operating officer's continued employment with the Company. Over the measurement period, the number of COO PSUs that may vest and the related stock-based compensation expense that is recognized is adjusted upward or downward based upon the probability of achieving the operational performance metrics. Depending on the probability of achieving the operational performance metrics and certification by the Company's Board or Leadership, Development, Inclusion and Compensation Committee of achievement of those operational performance metrics for each tranche, the COO PSUs vesting could be from 0 to 600,000 restricted stock units. As of December 31, 2021, the Company's management has determined that all milestones are probable of achievement. Stock-based compensation expense for this award totaled $8.0 million on the grant date and is recognized ratably through December 31, 2022. Approximately $3.0 million of stock-based compensation for the COO PSUs has been recorded to general and administrative expense during the year ended December 31, 2021.

In August 2021, the Company's chief executive officer and chief financial officer each received performance-based restricted stock units (the CEO PSUs and the CFO PSUs) with a per share grant date fair value ranging from $9.79 to $12.93. The CEO PSUs and the CFO PSUs are equity awards with both a service condition and market condition. The number of CEO PSUs that may vest could be from 0 to 6,000,000 restricted stock units and the number of CFO PSUs that may vest could be from 0 to 300,000 restricted stock units, determined based on the performance of the Company's stock against pre-established Volume Weighted Average Price (VWAP) targets. The VWAP targets are measured from the grant date through July 1, 2025. Upon approval of the CEO PSUs by stockholders and immediately prior to the effectiveness of the CEO PSUs, the performance-based stock option to purchase up to 3,250,000 shares of common stock granted to the Company's chief executive officer in 2018 was automatically cancelled and forfeited. The performance metrics of the 2018 CEO PSO had not been achieved and were not probable to be achieved prior to the conclusion of its term. The Company also reversed $1.3 million of previously recognized expense related to the unvested portion of the 2018 CEO PSO award during the year ended December 31, 2021.

The CEO PSUs and the CFO PSUs both vest in four tranches contingent upon both the achievement of VWAP targets and the respective officer's continued employment with the Company through the vesting dates. Over the measurement period, the number of PSUs that may vest and the related stock-based compensation expense that is recognized is adjusted based upon the actual date of achieving the VWAP targets. Stock-based compensation expense totaled $68.6 million for the CEO PSUs and $3.4 million for the CFO PSUs on the grant date and is recognized ratably through July 1, 2026. Approximately $6.1 million of stock-based compensation for the CEO PSUs and CFO PSUs has been recorded to general and administrative expense during the year ended December 31, 2021. Stock-based compensation expense is not subject to reversal even if the market condition is not achieved. The fair value of PSUs was determined using a Monte Carlo simulation with the following assumptions:

- Risk-free interest rate: 0.48%
- Expected volatility of the Company's common stock: 101%

Stock Option Activity

Stock option activity is summarized as follows:

Year ended December 31,	2021	2020	2019
Options granted	734,056	1,269,808	530,140
Weighted-average grant-date fair value per share	$ 13.54	$ 3.75	$ 3.83
Compensation expense related to stock options (in millions)	$ 1.8	$ 1.7	$ 1.9
Unrecognized compensation costs as of December 31 (in millions)	$ 7.8	$ 5.2	$ 4.5

The Company expects to recognize the December 31, 2021 balance of unrecognized costs over a weighted-average period of 2.8 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 a fair-value derived from 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,	2021	2020	2019
Expected dividend yield	—%	—%	—%
Risk-free interest rate	1.2%	0.7%	1.8%
Expected term (in years)	6.7	6.9	6.9
Expected volatility	97%	89%	84%

The expected life of options is based primarily on historical 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 price. 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, 2021 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, 2020	6,502,096	$ 7.64	7.6	$8,875
Options granted	734,056	$13.54		
Options exercised	(634,778)	$ 5.19		
Options forfeited or expired	(3,514,149)	$ 7.32		
Outstanding - December 31, 2021	3,087,225	$ 9.91	7.1	$2,580
Vested or expected to vest after December 31, 2021	2,975,309	$ 9.96	7.1	$2,493
Exercisable at December 31, 2021	1,547,828	$11.77	5.8	$1,283

The total intrinsic value of options exercised under all option plans was $6.7 million, $0 and $0 for the years ended December 31, 2021, 2020 and 2019, respectively.

Restricted Stock Units (Including Performance-based Stock Units) Activity and Expense

During the years ended December 31, 2021, 2020 and 2019, 10,786,300, 4,415,209 and 2,996,660 RSUs, respectively, were granted with weighted-average service-inception date fair value per unit of $12.27, $3.72 and

$3.96, respectively. The Company recognized RSU-related stock-based compensation expense of $30.7 million, $11.4 million and $10.2 million, respectively, for the years ended December 31, 2021, 2020 and 2019. As of December 31, 2021 and 2020, unrecognized RSU-related compensation costs totaled $116.9 million and $23.9 million, respectively.

Stock-based compensation expense for RSUs is measured based on the NASDAQ closing price of the Company's common stock on the date of grant.

The Company's RSU activity and related information for the year ended December 31, 2021 was as follows:

	Number of Restricted Stock Units	Weighted-average Grant-date Fair Value	Weighted-average Remaining Contractual Life (in years)
Outstanding - December 31, 2020	7,043,909	$ 4.18	1.5
Awarded	10,786,300	$12.27	
Vested	(3,177,151)	$ 5.84	
Forfeited	(921,738)	$ 6.56	
Outstanding - December 31, 2021	13,731,320	$ 9.99	2.8
Vested or expected to vest after December 31, 2021	11,743,504	$ 9.85	2.6

ESPP Activity and Expense

During the years ended December 31, 2021 and 2020, 290,063 and 357,655 shares, respectively, of the Company's common stock were purchased under the 2010 ESPP. At December 31, 2021 and 2020, 1,046,869 and 494,855 shares, respectively, of the Company's common stock remained reserved for issuance under the 2010 ESPP.

During the years ended December 31, 2021, 2020 and 2019, the Company also recognized ESPP-related stock-based compensation expense of $0.9 million, $0.6 million and $0.4 million, respectively.

14. Income Taxes

The components of loss before income taxes and loss from investment in affiliate are as follows:

Years Ended December 31, (In thousands)	2021	2020	2019
United States	$(268,423)	$(324,720)	$(227,614)
Foreign	(10,660)	(6,015)	(14,524)
Loss before income taxes and loss from investment in affiliate	$(279,083)	$(330,735)	$(242,138)

The components of the provision for income taxes are as follows:

Years Ended December 31, (In thousands)	2021	2020	2019
Current:			
Federal	$(7,478)	$293	$621
State	—	—	—
Foreign	—	—	8
Total current (benefit) provision	(7,478)	293	629
Deferred:			
Federal	(326)	—	—
State	(22)	—	—
Foreign	(288)	—	—
Total deferred provision	(636)	—	—
Total (benefit from) provision for income taxes	$(8,114)	$293	$629

A reconciliation between the statutory federal income tax and the Company's effective tax rates as a percentage of loss before income taxes and loss from investments in affiliate is as follows:

Years Ended December 31,	2021	2020	2019
Statutory tax rate	(21.0)%	(21.0)%	(21.0)%
Change in fair value of convertible debt	2.9%	5.7%	—%
Derivative liability	2.2%	4.8%	4.7%
Federal R&D credit	(0.9)%	(0.6)%	(0.7)%
Foreign losses	0.7%	0.4%	0.9%
IRC Section 382 limitation	(2.7)%	—%	—%
Nondeductible interest	0.3%	0.5%	1.0%
Stock-based compensation	(1.5)%	—%	—%
Other	1.3%	0.3%	2.4%
Change in valuation allowance	15.7%	10.0%	13.0%
Effective income tax rate	(3.0)%	0.1%	0.3%

Temporary differences and carryforwards that gave rise to significant portions of deferred taxes are as follows:

December 31, (In thousands)	2021	2020	2019
Net operating loss carryforwards	$179,921	$123,638	$ 88,513
Property, plant and equipment	6,239	6,965	8,239
Research and development credits	22,463	18,279	15,002
Foreign tax credit	—	—	—
Accruals and reserves	10,094	12,003	13,934
Stock-based compensation	3,530	4,291	6,164
Disallowed interest carryforward	12,922	10,843	7,072
Capitalized research and development costs	10,903	16,390	21,723
Intangible assets and other	—	1,888	2,503
Equity investments	—	531	304
Total deferred tax assets	246,072	194,828	163,454

December 31, (In thousands)	2021	2020	2019
Intangible assets and other	(6,611)	—	—
Equity investments	(515)	—	—
Operating lease right-of-use assets	(4,783)	(2,051)	(2,643)
Debt discounts and derivatives	(79,845)	(774)	(7,176)
Total deferred tax liabilities	(91,754)	(2,825)	(9,819)
Net deferred tax assets prior to valuation allowance	154,318	192,003	153,635
Less: deferred tax assets valuation allowance	(158,597)	(192,003)	(153,635)
Net deferred tax assets	$ (4,279)	$ —	$ —

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, 2021	$192,003	$ —	$(33,406)	$158,597
Year ended December 31, 2020	$153,635	$38,368	$ —	$192,003
Year ended December 31, 2019	$124,025	$29,610	$ —	$153,635

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, 2021, 2020 and 2019. The valuation allowance decreased by $33.4 million during the year ended December 31, 2021, increased by $38.4 million during the year ended December 31, 2020, and increased by $29.6 million during the year ended December 31, 2019. During the year ended December 31, 2021 the Company established an $81.1 million deferred tax liability for the debt discount recorded to additional paid-in capital in connection the issuance of the 2026 Convertible Senior Notes. Due to our U.S. net deferred tax assets being fully offset by valuation allowance, consistent with ASU 2019-12, the recognition of the deferred tax liability was fully offset by a reduction in our required valuation allowance and no tax effects were recorded to additional paid-in capital.

In connection with the acquisition of Olika on August 11, 2021, a net deferred tax liability of $348K was established, the most significant component of which was related to the book/tax basis differences associated with the acquired trademark and customer relationships. The net deferred tax liability from this acquisition created an additional source of income to realize deferred tax assets. As the Company continues to maintain a full valuation allowance against its deferred tax assets, this additional source of income resulted in the release of the Company's previously recorded valuation allowance against deferred assets. Consistent with the applicable guidance the release of the valuation allowance of $348K caused by the acquisition was recorded in the consolidated financial statements outside of acquisition accounting as a tax benefit to the consolidated statements of operations for the year ended December 31, 2021.

In connection with the acquisitions of MG Empower and Beauty Labs on August 11, 2021, net deferred tax liabilities of $0.7 million and $3.5 million, respectively, were established, the most significant component of which is related to the book/tax basis differences associated with the acquired technology and customer relationships. Amortization of the intangibles also contributed to the deferred tax benefit recorded in the foreign jurisdictions for the year ended December 31, 2021.

On March 11, 2021, President Biden signed the American Rescue Plan (ARPA) into law. The new law, among other things, extends and enhances a number of current-law incentives for individuals and businesses. In addition, there are corporate tax revenue raisers to ensure the broader measure complied with budget reconciliation rules under which the bill was passed. The tax law changes in the ARPA did not have a material impact on the Company's income tax provision.

As of December 31, 2021, the Company had federal net operating loss carryforwards of $794.5 million and state net operating loss carryforwards of $217.5 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 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, 2021, the Company experienced a greater than 50% ownership shift on March 31, 2021. Per the Section 382 analysis, this 2021 ownership change did not result in a limitation such that there would be any permanent loss of NOL or research tax credit carryovers. Any NOLs and other tax attributes generated by the Company subsequent to March 31, 2021 are currently not subject to any IRC Section 382 limitations. The Company notes that federal net operating losses generated during 2019 through 2021 have an indefinite carryover life and that NOL utilization is limited to 80% of taxable income. As of December 31, 2021, the Company had foreign net operating loss carryovers of $39.3 million.

As of December 31, 2021, the Company had federal research and development credit carryforwards of $7.8 million and California research and development credit carryforwards of $18.9 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 as of December 31, 2018	$30,127
Increases in tax positions for prior period	—
Increases in tax positions during current period	1,411
Balance as of December 31, 2019	31,538
Increases in tax positions for prior period	—
Increases in tax positions during current period	1,556
Balance as of December 31, 2020	$33,094
Lapse of statute	(6,564)
Increases in tax positions for prior period	—
Increases in tax positions during current period	1,979
Balance as of December 31, 2021	$28,509

The Company's policy is to include interest and penalties related to unrecognized tax benefits within the provision for income taxes. The Company accrued $0, $0.3 million and $0.6 million for such interest for the years ended December 31, 2021, 2020 and 2019, 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 believes that it is reasonably possible that up to approximately $18 thousand of unrecognized tax benefits may reverse in the next 12 months.

The Company's primary tax jurisdiction is the United States. For U.S. federal and state income tax purposes, returns for tax years from 2007 through the current year remain open and subject to examination by the appropriate federal or state taxing authorities. Brazil tax years from 2012 through the current year remain open and subject to examination.

As of December 31, 2021, 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.

15. Geographical Information

The chief operating decision maker is the Company's Chief Executive Officer, who makes resource allocation decisions and assesses business 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 10, "Revenue Recognition".

Property, Plant and Equipment

December 31, (In thousands)	2021	2020
United States	$18,537	$14,686
Brazil	54,247	16,845
Europe	51	1,344
	$72,835	$32,875

16. Subsequent Events

Acquisition of Ecofabulous Cosmetics

On January 26, 2022, the Company and certain of its subsidiaries entered into an Agreement and Plan of Merger with Zem Joaquin and No Planet B Investments, LLC for the acquisition of 70% of No Planet B LLC (EcoFabulous Cosmetics), a privately held company providing Gen Z consumers affordably priced skin care and color cosmetics with an emphasis on sustainability, product performance and efficacy, for an aggregate consideration that consists of an issuance by the Company of shares of the Company's common stock representing less than 1% of the Company's outstanding shares.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended ("Exchange Act")) are designed to provide reasonable assurance that information required to be disclosed in reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC and that such information is accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosures.

Under the supervision and with the participation of our management, including the Chief Executive Officer and the Chief Financial Officer, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this Annual Report on Form 10-K. Based on this evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2021.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Securities Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2021 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) *Internal Control-Integrated Framework* (2013). Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with U.S. generally accepted accounting principles. Based on our assessment and those criteria, management concluded that the Company maintained effective internal control over financial reporting as of December 31, 2021.

Under guidelines established by the SEC, companies are allowed to exclude an acquired business from management's report on internal control over financial reporting for the first year subsequent to the acquisition while integrating the acquired operations. Accordingly, management has excluded MG Empower, Olika and Beauty Labs from its annual report on internal control over financial reporting as of December 31, 2021. These acquired businesses collectively represented approximately 1% and 1% of the Company's consolidated total assets and total revenue, respectively, for the year ended December 31, 2021.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2021 has been audited by Macias, Gini & O'Connell LLP, an independent registered public accounting firm, as stated in their report, 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.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the year ended December 31, 2021.

Inherent Limitations on the Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, believes that our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives and are effective at the reasonable assurance level. However, our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more persons or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information

Item 8.01. Other Events.

On January 26, 2022, Amyris, Inc. (the Company) and certain of its subsidiaries entered into an Agreement and Plan of Merger (the Merger Agreement) with Zem Joaquin and No Planet B Investments, LLC (the Selling Stockholders) for an aggregate consideration that consists of an issuance by the Company of shares of the Company's common stock representing less than 1% of the Company's outstanding shares (the Unregistered Securities) to the Selling Stockholders.

Furthermore, pursuant to the terms and conditions of the Merger Agreement, the Company agreed to file a prospectus supplement, which supplements the Prospectus filed with the SEC on April 7, 2021 together with a Registration Statement on Form S-3ASR (File No. 333-255105), to register the resale of the Unregistered Securities (the Offering). Each of the Selling Stockholders may sell its respective Unregistered Securities. The Company will not receive any proceeds from the Offering.

A copy of the opinion of Fenwick & West LLP, relating to the validity of certain of the shares in connection with the Offering, is filed with this Annual Report on Form 10-K as Exhibit 5.1.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

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 2022 Annual Meeting of Stockholders (the 2022 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 2022 Proxy Statement.

Item 11. Executive Compensation

The information required under this Item 11 is incorporated by reference to the 2022 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 2022 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 2022 Proxy Statement.

Item 14. Principal Accounting Fees and Services

The information required under this Item 14 is incorporated by reference to the 2022 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 14, "Income Taxes" in Part II, Item 8 of this Annual Report on Form 10-K.
3. Exhibits: See "Index to Exhibits" below.

Item 16. Form 10-K Summary

None.

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	*	Amendment No. 3, dated February 24, 2020, to the Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A.
2.05	*	Amendment No. 4, dated as of March 30, 2020, to the Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A.
2.06	*	Amendment No. 5, dated May 22, 2020, to the Quota Purchase Agreement, dated November 17, 2017, among registrant, AB Technologies LLC and DSM Produtos Nutricionais Brasil S.A.
2.07 [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	*	Certificate of Amendment of the Restated Certificate of Incorporation dated May 29, 2020
3.08	*	Certificate of Amendment of the Restated Certificate of Incorporation dated May 28, 2021
3.09	*	Restated Bylaws
4.01	*	Specimen of Common Stock Certificate
4.02 [a]	*	Agreement, dated February 23, 2012, among registrant, Maxwell (Mauritius) Pte Ltd, Naxyris SA, Biolding Investment S.A., and Sualk Capital Ltd.
4.03	*	Exchange Agreement, dated July 26, 2015, between registrant and the investors listed therein
4.04	*	Letter Agreement dated as of July 29, 2015 among registrant and registrant's security holders listed therein
4.05	*	Warrant to Purchase Stock issued July 29, 2015 by registrant to Maxwell (Mauritius) Pte Ltd
4.06	*	Warrant to Purchase Stock issued July 29, 2015 by registrant to Maxwell (Mauritius) Pte Ltd
4.07	*	Securities Purchase Agreement, dated April 8, 2016, between registrant and Bill & Melinda Gates Foundation
4.08	*	Letter Agreement re Charitable Purposes and Use of Funds, dated April 8, 2016, between registrant and the Bill & Melinda Gates Foundation
4.09	*	Form of Securities Purchase Agreement, dated May 8, 2017, between registrant and the other parties thereto
4.10	*	Amendment No. 1, dated May 30, 2017 to Securities Purchase Agreement, dated May 8, 2017, between registrant and the other parties thereto

Exhibit No.		Description
4.11	*	Form of Common Stock Purchase Warrant (Cash Warrant) issued May 11, 2017 by registrant to the purchasers thereof (found at Exhibit C-1, herein)
4.12	*	Form of Common Stock Purchase Warrant (Dilution Warrant) issued May 11, 2017 by registrant to the purchasers thereof (found at Exhibit C-2, herein)
4.13	*	Stockholder Agreement, dated May 11, 2017, between registrant and DSM International B.V.
4.14 [a]	*	Amended and Restated Stockholder Agreement, dated August 7, 2017, between registrant and DSM International B.V.
4.15	*	Common Stock Purchase Warrant (Cash Warrant), issued May 31, 2017, by registrant to the investor named therein
4.16	*	Securities Purchase Agreement, dated August 2, 2017, between registrant and DSM International B.V.
4.17	*	Form of Stockholder Agreement, dated August 3, 2017, between registrant and affiliates of Vivo Capital LLC (found at Exhibit C, herein)
4.18	*	Common Stock Purchase Warrant issued May 10, 2019 by registrant to Silverback Opportunistic Credit Master Fund Limited
4.19	*	Form of Security Purchase Agreement, dated January 31, 2020, between registrant and certain investors
4.20	*	Form of Right to Purchase Shares of Common Stock issued January 31, 2020 by registrant to certain investors (found at Exhibit A, herein)
4.21	*	Form of Warrant Amendment Agreement, dated January 31, 2020, between registrant and certain investors
4.22	*	Warrant Amendment Agreement, dated May 1, 2020, between registrant and LMAP Kappa Limited
4.23	*	Rights Amendment Agreement, dated May 1, 2020, between registrant and Silverback Opportunistic Credit Master Fund Limited
4.24	*	Form of Security Purchase Agreement, dated June 1, 2020 or June 4, 2020, between registrant and certain accredited investors
4.25	*	Form of Amendment to Warrants to Purchase Shares of Common Stock, dated October 23, 2020, between registrant and certain investors
4.26	*	Indenture, dated as of November 15, 2021, by and between registrant and U.S. Bank National Association, as trustee
4.27	*	Description of Registrant’s Securities Registered Under Section 12 of the Exchange Act
5.01	**	Opinion of Fenwick & West LLP
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

Exhibit No.		Description
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 a c	*	Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda.
10.14 a c	*	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 c	*	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 c	*	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.
10.17 c	*	Fourth Amendment, dated May 7, 2019, to Lease Agreement, dated August 10, 2011, between Amyris Brasil Ltda. And Techno Park Empreendimentos e Administração Imobiliária Ltda.
10.18 c	*	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)
10.19 a c	*	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.
10.20 a c	*	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
10.21 c	*	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
10.22 c	*	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
10.23 c	*	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
10.24 c	*	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
10.25	*	Lease Agreement, dated May 10, 2019, between Amyris Brotas Fermemtação de Performance Ltda. and Raízen Energia S.A.
10.26	**	1st Amendment to the Lease Agreement, dated August 13, 2020, between Amyris Brotas Fermemtação de Performance Ltda. and Raízen Energia S.A.

Exhibit No.		Description
10.27	**	Guaranty of Lease, dated October 13, 2021, by Amyris, Inc. for the benefit of CP Logistics NVCC IV, LLC
10.28 [a]	*	Joint Venture Agreement, dated December 6, 2016, among registrant, Nikko Chemicals Co. Ltd., and Nippon Surfactant Industries Co., Ltd.
10.29 [a]	*	First Amended and Restated LLC Operating Agreement of Aprinnova, LLC (f/k/a Neossance, LLC) dated December 6, 2016
10.30 [b]	*	Supply Agreement, dated December 28, 2017, between registrant and DSM Produtos Nutricionais Brasil S.A.
10.31 [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.
10.32 [b]	*	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.
10.33	*	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.
10.34 [a]	*	Amendment No. 4, dated December 18, 2020, to Supply Agreement, dated December 21, 2020, between registrant and DSM Nutritional Products AG, as assignee of DSM Produtos Nutricionais Brasil S.A.
10.35	*	Amendment No. 5, dated March 31, 2021, to Supply Agreement, dated December 28, 2017, between us and DSM Nutritional Products AG, as assignee of DSM Produtos Nutricionais Brasil S.A.
10.36	*	Assignment Agreement, dated December 31, 2018, between registrant and Hangzhou Xinfu Science & Tech Co. Ltd
10.37 [b]	*	Assignment and Assumption Agreement, dated April 16, 2019, among registrant, DSM Nutritional Products AG and DSM Nutritional Products Europe Ltd.
10.38	*	Amended and Restated Loan and Security Agreement, dated October 28, 2019, by and among the Company, the Subsidiary Guarantors and Foris Ventures, LLC
10.39	*	Amendment No. 1 to Amended and Restated Loan And Security Agreement, dated June 1, 2020, between registrant and Foris Ventures, LLC
10.40	*	Amendment to Amended and Restated Loan and Security Agreement, dated November 9, 2021, between registrant and Foris Ventures, LLC
10.41 [a]	*	Farnesene Framework Agreement, dated December 18, 2020, between registrant and DSM Nutritional Products Ltd.
10.42	*	Asset Purchase Agreement, dated March 31, 2021, between us and DSM Nutritional Products Ltd.
10.43	*†	Offer Letter dated September 27, 2006 between registrant and John Melo
10.44	*†	Amendment, dated December 18, 2008, to Offer Letter, dated September 27, 2006, between registrant and John Melo
10.45	*†	Amendment #1, dated May 30, 2018, to Executive Severance Plan Participation Agreement, dated December 18, 2013, between the registrant and John Melo
10.46	*†	Offer Letter, dated June 5, 2017, between registrant and Nicole Kelsey
10.47	*†	Amendment, dated September 18, 2017, to Offer Letter, dated June 5, 2017, between registrant and Nicole Kelsey
10.48	*†	Offer Letter, dated October 5, 2017, between registrant and Eduardo Alvarez

Exhibit No.		Description
10.49	*†	Offer Letter, dated February 6, 2020, between registrant and Han Kieftenbeld
10.50	*†	2010 Equity Incentive Plan, as amended on May 22, 2018, and forms of award agreements thereunder
10.51	*†	Amended and Restated 2010 Employee Stock Purchase Plan
10.52	*†	2020 Equity Incentive Plan
10.53	*†	Form of Restricted Stock Unit Agreement for 2020 Equity Incentive Plan, as amended
10.54	*†	Form of Stock Option Agreement for 2020 Equity Incentive Plan, as amended
10.55	*†	Performance-vesting restricted stock unit award, dated August 2, 2021, between the registrant and John Melo (found at Addendum A, herein)
10.56	*†	Executive Severance Plan, effective November 6, 2013
10.57	*†	Compensation arrangements between registrant and its non-employee directors
10.58	*†	Compensation arrangements between registrant and its executive officers
10.59	*†	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
23.02	**	Consent of Fenwick & West LLP (contained in Exhibit 5.1)
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	***	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	***	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
104		Cover Page Interactive Data File (embedded within the Inline XBRL 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 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.
† Management contract or compensatory plan or arrangement.
* Incorporated by reference as an exhibit to this Report.
** Filed with this Report.
*** Furnished with this Report

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 9, 2022

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints John G. Melo and Han Kieftenbeld, 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.

Signatures

Signature	Title	Date
/s/ John G. Melo John G. Melo	Director, President and Chief Executive Officer (Principal Executive Officer)	March 9, 2022
/s/ Han Kieftenbeld Han Kieftenbeld	Chief Financial Officer (Principal Financial Officer)	March 9, 2022
/s/ Anthony Hughes Anthony Hughes	Chief Accounting Officer (Principal Accounting Officer)	March 9, 2022
/s/ John Doerr John Doerr	Director	March 9, 2022
/s/ Ana Dutra Ana Dutra	Director	March 9, 2022
/s/ Geoffrey Duyk Geoffrey Duyk	Director	March 9, 2022
/s/ Philip Eykerman Philip Eykerman	Director	March 9, 2022
/s/ Frank Kung Frank Kung	Director	March 9, 2022
/s/ James McCann James McCann	Director	March 9, 2022
/s/ Steve Mills Steve Mills	Director	March 9, 2022
/s/ Ryan Panchadsaram Ryan Panchadsaram	Director	March 9, 2022
/s/ Lisa Qi Lisa Qi	Director	March 9, 2022
/s/ Julie Washington Julie Washington	Director	March 9, 2022

MAKE GOOD.
NO COMPROMISE.®