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 001-36361

Aravive, Inc.

(Exact name of Registrant as specified in its Charter)

Delaware	**26-4106690**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification Number)**

River Oaks Tower
3730 Kirby Drive, Suite 1200
Houston, Texas 77098
(Address of principal executive offices)
(936) 355-1910
(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, par value $0.0001 per share	**ARAV**	**Nasdaq Global Select Market**

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 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, smaller reporting company, or an emerging growth company. See the definition 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 voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The Nasdaq Global Select Market on June 30, 2021, the last business day of the registrant's most recently completed second fiscal quarter, was $89,127,600.

The number of shares of registrant's Common Stock outstanding as of March 25, 2022 was 21,094,357.

Documents incorporated by reference: None

Table of Contents

		Page
PART I		
Item 1.	Business	3
Item 1A.	Risk Factors	25
Item 1B.	Unresolved Staff Comments	57
Item 2.	Properties	57
Item 3.	Legal Proceedings	57
Item 4.	Mine Safety Disclosures	57
PART II		
Item 5.	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	58
Item 6.	[Reserved]	58
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	59
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	66
Item 8.	Financial Statements and Supplementary Data	67
Item 9.	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	67
Item 9A.	Controls and Procedures	67
Item 9B.	Other Information	67
Item 9C.	Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	67
PART III		
Item 10.	Directors, Executive Officers and Corporate Governance	68
Item 11.	Executive Compensation	74
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	87
Item 13.	Certain Relationships and Related Transactions, and Director Independence	89
Item 14.	Principal Accounting Fees and Services	90
PART IV		
Item 15.	Exhibits, Financial Statement Schedule	92
Item 16.	Form 10-K Summary	92

PART I

GENERAL

Unless otherwise indicated, all references to "Aravive," "we," "us," "our" or the "Company" in this Annual Report on Form 10-K refer to Aravive, Inc. and our wholly owned subsidiary, Aravive Biologics, Inc.

"Aravive®" and our other registered and common law trade names, trademarks and service marks are the property of Aravive, Inc. Other trade names, trademarks and service marks used in this Annual Report on Form 10-K are the property of their respective owners. Solely for convenience, the trademarks and trade names in this Annual Report on Form 10-K may be referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert their rights thereto.

We may announce material business and financial information to our investors using our investor relations website at http://ir.aravive.com/investors/financial-information. We therefore encourage investors and others interested in Aravive to review the information that we make available on our website, in addition to following our filings with the Securities and Exchange Commission (the "SEC"), webcasts, press releases and conference calls. Information contained on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K, and you should not consider information on our website to be part of this Annual Report on Form 10-K.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains "forward-looking statements" that involve risks and uncertainties. Our actual results could differ materially from those discussed in the forward-looking statements. The statements contained in this report that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Forward-looking statements are often identified by the use of words such as, but not limited to, "anticipate," "believe," "can," "continue," "could," "estimate," "expect," "intend," "may," "plan," "project," "seek," "should," "strategy," "target," "will," "would" and similar expressions or variations intended to identify forward-looking statements. These statements are based on the beliefs and assumptions of our management based on information currently available to management. Such forward-looking statements are subject to risks, uncertainties and other important factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified below and those discussed in the section titled "Risk Factors" included under Part I, Item 1A below. Furthermore, such forward-looking statements speak only as of the date of this report. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements.

This Annual Report on Form 10-K also contains market data related to our business and industry. These market data include projections that are based on a number of assumptions. If these assumptions turn out to be incorrect, actual results may differ from the projections based on these assumptions. As a result, our markets may not grow at the rates projected by these data, or at all. The failure of these markets to grow at these projected rates may harm on our business, results of operations, financial condition and the market price of our common stock.

Summary Risk Factors

The following is a summary of the key risks relating to the Company. A more detailed description of each of the risks can be found below in Item 1A. Risk Factors.

Risks related to our financial position and capital requirements

- We have a limited operating history and have incurred significant losses since inception. We have only one product candidate, batiraxcept, and no commercial sales.
- We expect to continue to incur significant losses for the foreseeable future and may never achieve or maintain profitability.
- There is uncertainty regarding our ability to maintain liquidity sufficient to operate our business effectively, which raises substantial doubt about our ability to continue as a going concern.
- We will need additional funds to support our operations and such funding may not be available to us on acceptable terms, or at all.
- Raising additional funds by issuing securities may cause dilution to existing stockholders, and raising funds through lending and licensing arrangements may restrict our operations or require it to relinquish proprietary rights.
- Our operating results may fluctuate significantly, making our operations difficult to predict.

Our operating results may fluctuate significantly

Risks Related To Our Business

- Global health crises may adversely affect our planned operations and the coronavirus ("COVID-19") pandemic could adversely impact our business, including our clinical trials.
- Business disruptions could seriously harm our future revenue and financial condition and increase costs and expenses.
- Our reliance on government funding may impose requirements that limit our ability to take certain actions and subject us to potential financial penalties.
- If the agreements underlying the license on which we rely were terminated, or if other rights that may be necessary for commercialization of our intended products cannot be obtained, we would be materially adversely affected.
- If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.
- We depend on collaborations with third parties for the development and commercialization of some of our product candidates.
- We rely extensively on our information technology systems and are vulnerable to damage and interruption.
- We may face particular data protection, data security and privacy risks in connection with privacy regulations.
- Any failure to maintain the security of information could expose us to litigation, government enforcement actions and costly response measures, and could disrupt our operations and harm our reputation.

- We currently have only one product candidate, batiraxcept, in clinical development.
- We are dependent on our ability to successfully advance batiraxcept through the various stages of clinical development.
- We have limited experience conducting clinical trials.
- If the actual or perceived therapeutic benefits, or the safety or tolerability profile of batiraxcept, is not equal to or superior to other competing treatments, we may terminate the development of batiraxcept.
- Any problems obtaining the standard of care drugs used in our clinical trials could result in a trial delay or interruption.
- If batiraxcept, requires or would commercially benefit from a companion diagnostic, and if we are unable obtain regulatory clearance or approval for such a companion diagnostic test we may not realize the full commercial potential of batiraxcept.
- If batiraxcept has undesirable side effects, it may delay or preclude its development.
- We rely upon one third party to manufacture our drug substance.
- We may be unable to manufacture our product candidate in sufficient quantities for commercialization.
- Changes to our third-party contract manufacturer could adversely impact our timelines and costs.
- We rely on third parties as vendors, manufacturers and for various services, over which we have no control.
- We may not be able to retain key personnel or attract, retain and motivate qualified personnel.

Risks Related to Clinical Development, Regulatory Approval and Commercialization

- If the results from preclinical studies or clinical trials of our product candidate are unfavorable, we could be delayed or precluded from the further development or commercialization of the product candidate.
- Clinical trials are very expensive, time-consuming, difficult to design and implement and involve an uncertain outcome.
- Enrollment and retention of subjects in clinical trials is an expensive and time-consuming process and could be made more difficult or rendered impossible by multiple factors outside our control**.**
- We face significant competition from other biotechnology and pharmaceutical companies.
- Batiraxcept, may cause adverse effects or have other properties that could delay or prevent our regulatory approval or limit the scope of any approved label or market acceptance.
- Improper activities by our employees, independent contractors, principal investigators, consultants, commercial collaborators, service providers and other vendors could have an adverse effect on our results of operations.
- If we are not able to obtain, or are delayed in obtaining, required regulatory approvals, we will not be able to commercialize, or will be delayed in commercializing batiraxcept.
- We may never obtain approval for or commercialize batiraxcept.
- Even if we obtain regulatory approval, we, may face future development and regulatory difficulties.
- Our product candidate may not receive market acceptance by physicians, patients, third-party payors or others.
- Any failures to comply with healthcare regulatory laws could negatively impact our business.
- We are subject to product liability risks which could result in lawsuits that may require us to incur substantial liabilities.
- We will need to establish sales, marketing and distribution.
- Obtaining approval to commercialize batiraxcept outside of the United States will subject us to a variety of risks.
- Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval.

Risks Related to Our Intellectual Property

- We may be unable to obtain and maintain patent protection for batiraxcept, or the scope of any patent protection we do obtain may be insufficient.
- We may be involved in lawsuits to protect or enforce the patents upon which we rely.
- Changes in U.S. patent law could diminish the value of patents and impair our ability to protect our product candidate.
- If a third party claims we are infringing on their intellectual property rights, we could incur significant expenses, or be prevented from further developing or commercializing batiraxcept.
- We may not be able to protect our intellectual property rights throughout the world, which could impair our business.
- We are subject to the possibility that a competitor will discover our trade secrets and that they will be misappropriated or disclosed.
- Our patent protection could be reduced or eliminated for non-compliance with various governmental requirements.
- Intellectual property rights do not necessarily address all potential threats to our competitive advantage.
- We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Risks Related to the ownership of our common stock

- Our stock price is volatile and may be volatile in the future.
- Our executive officers, directors, entities under their control and principal stockholders can exert significant influence on all matters submitted to stockholder for approval due to their share ownership.
- We incur significant costs as a result of operating as a public company.
- We are currently a “smaller reporting company,” as defined in the Exchange Act and have elected to take advantage of certain of the scaled disclosures available to smaller reporting companies.
- We may fail to satisfy applicable Nasdaq listing requirements.
- An active trading market for our common stock may not be maintained.
- If securities or industry analysts do not publish research, or publish inaccurate or unfavorable research, about our business, our stock price and trading volume could decline.
- Provisions in our corporate charter documents and under Delaware law could make an acquisition of us more difficult and may prevent attempts by our stockholders to replace or remove our current management.
- Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for certain disputes between us and our stockholders.
- Our employment arrangements with our executive officers may require us to pay severance benefits to any of those persons who are terminated in connection with a change in control of us.
- We do not anticipate paying any cash dividends on our common stock in the foreseeable future.

Item 1. Business.

Overview

Aravive, Inc. was incorporated on December 10, 2008 in the State of Delaware. Aravive Biologics, Inc. (“Aravive Biologics”) our wholly owned subsidiary was incorporated in 2007. Aravive is a clinical-stage biopharmaceutical company developing treatments designed to halt the progression of life-threatening diseases, including cancer and fibrosis.

Our lead product candidate, batiraxcept (formerly AVB-500), is an ultrahigh-affinity, decoy protein that targets the GAS6-AXL signaling pathway. By capturing serum GAS6, batiraxcept starves the AXL pathway of its signal, potentially halting the biological programming that promotes disease progression. AXL receptor signaling plays an important role in multiple types of malignancies by promoting metastasis, cancer cell survival, resistance to treatments, and immune suppression.

Our current development program benefits from the availability of a proprietary serum-based biomarker that accelerated batiraxcept drug development by allowing us to select a pharmacologically active dose and may potentially identify the cancer patients that have the best chance of responding to batiraxcept.

In July 2016, Aravive Biologics was approved for a $20.0 million Product Development Award from the Cancer Prevention and Research Institute of Texas (“CPRIT Grant”). The CPRIT Grant was expected to allow Aravive Biologics to develop the product candidate referenced above through clinical trials. The CPRIT Grant was effective as of June 1, 2016 and terminated on November 30, 2019. Aravive Biologics’ royalty and other obligations, including its obligation to repay the disbursed grant proceeds under certain circumstances, survive the termination of the agreement. The CPRIT Grant was subject to customary CPRIT funding conditions including a matching funds requirement where Aravive Biologics matched 50% of funding from the CPRIT Grant. Consequently, Aravive Biologics was required to raise $10.0 million in matching funds over the three-year project. Aravive Biologics raised all its required $10.0 million in matching funds.

Aravive Biologics’ award from CPRIT requires it to pay CPRIT a portion of its revenues from sales of certain products, or received from its licensees or sublicensees, at tiered percentages of revenue in the low- to mid-single digits until the aggregate amount of such payments equals 400% of the grant award proceeds, and thereafter at a rate of less than one percent for as long as Aravive Biologics maintains government exclusivity. In addition, the grant contract also contains a provision that provides for repayment to CPRIT of the full amount of the grant proceeds under certain specified circumstances involving relocation of Aravive Biologics’ principal place of business outside Texas.

In our completed Phase 1 clinical trial in healthy volunteers with batiraxcept, we demonstrated proof of mechanism for batiraxcept in neutralizing GAS6. Importantly, batiraxcept had a favorable safety profile preclinically and in the first in human trial and Phase 1b clinical trial in cancer patients.

In August 2018, the U.S. Food and Drug Administration (“FDA”) designated as a Fast Track development program the investigation of batiraxcept for platinum-resistant recurrent ovarian cancer ("PROC").

In December 2018, we initiated a Phase 1b clinical trial of batiraxcept combined with standard of care therapies in patients with PROC for which it reported results in July 2020.

In April 2020, we entered into a license and collaboration agreement with WuXi Biologics (Hong Kong) Limited (“WuXi”), the objective of which is to identify and develop novel high-affinity bispecific antibodies against CCN2, also known as connective tissue growth factor ("CTGF"), implicated in cancer and fibrosis, and identified from a similar target discovery screen that identified the significance of the AXL/GAS6 pathway in cancer. The goal is to generate a best-in-class therapeutic targeting desmoplasia and tumor growth for initial investigation in the clinic in 2023.

In November 2020, we entered into a collaboration and license agreement with 3D Medicines Inc. ("3D Medicines") (the “Agreement” or the “3D Medicine Agreement”), whereby the Company granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance for the diagnosis, treatment or prevention of human oncological diseases, in mainland China, Taiwan, Hong Kong and Macau (the "Territory") for an upfront cash payment of $12 million. During the second quarter of 2021, we received a $6 million development milestone from 3D Medicines, for completing our first clinical milestone with 3D Medicines, dosing the first patient in our Phase 3 trial of batiraxcept in PROC. Based upon this event, we received a $6 million cash payment during the second quarter of 2021. In August 2021, we received a $3 million development milestone from 3D Medicines, based on the Center for Drug Evaluation ("CDE") of the China National Medical Products Administration ("NMPA") approval of the Investigational New Drug application ("IND") submitted by 3D Medicines to participate in our international batiraxcept Phase 3 PROC clinical trial.

During the fourth quarter of 2020, we initiated the Phase 1b portion of our Phase 1b/2 trial of batiraxcept in clear cell renal cell carcinoma (“ccRCC”) and we dosed our first patient in the trial in March 2021.

During the first quarter of 2021, we initiated a registrational Phase 3 trial of batiraxcept in PROC and we dosed our first patient in the trial in April 2021.

In May 2021, we initiated the Phase 1b portion of our Phase 1b/2 trial of batiraxcept in first-line pancreatic adenocarcinoma, and we dosed our first patient in the trial in August 2021.

In June 2021, we announced positive initial safety, pharmacokinetic, and pharmacodynamic results from the Phase 1b portion of the Phase 1b/2 clinical trial in ccRCC in 3 patients dosed with 15mg/kg of batiraxcept. Based on the pharmacokinetics (“PK”), pharmacodynamics, and safety data at 15mg/kg of batiraxcept, and approval by the Data and Safety Monitoring Board ("DSMB"), we announced plans to expand the dosing of 15mg/kg of batiraxcept to additional patients to determine the potential of initiating the Phase 2 portion with this dose. We also announced plans to continue to investigate higher doses of batiraxcept in the Phase 1b to obtain additional safety, PK, and pharmacodynamics information.

In October 2021, the European Medicines Agency (“EMA”) granted orphan drug designation for batiraxcept for the treatment of ovarian cancer, following a recommendation from the Committee for Orphan Medicinal Products.

In November 2021, we announced positive preliminary safety, pharmacokinetic, and pharmacodynamic data for 18 patients and clinical activity data for 16 evaluable patients from the Phase 1b trial evaluating batiraxcept in combination with cabozantinib for treatment of ccRCC.

In January 2022, we provided updated safety, pharmacokinetic, and pharmacodynamic data encompassing a total of 26 patients and updated clinical activity data encompassing a total of 23 patients from the Phase 1b trial evaluating batiraxcept in combination with cabozantinib for treatment of ccRCC. We also provided clinical activity data for 6 patients in a trial evaluating batiraxcept in combination with gemcitabine and nab-paclitaxel (Abraxane®) in patients with advanced or metastatic pancreatic adenocarcinoma eligible to receive gemcitabine and nab-paclitaxel as first-line treatment.

In March 2022, we announced updated safety and clinical activity data from the 26 patients from the Phase 1b trial evaluating batiraxcept in combination with cabozantinib for treatment of ccRCC. We also provided updated clinical activity for 13 patients in a trial evaluating batiraxcept in combination with gemcitabine and nab-paclitaxel (Abraxane®) in first-line pancreatic adenocarcinoma patients. Additionally, we announced that the interim analysis from the P3 PROC trial had been eliminated as we had confidence that the study would enroll the required number of bevacizumab naïve patients to balance the bevacizumab populations without an interim analysis. We are in the process of communicating with the FDA regarding changes to the analysis plan.

As we advance our clinical programs, we are in close contact with our clinical research organizations ("CROs") and clinical sites and are continually assessing the impact of COVID-19 on our planned trials and current timelines and costs. We have experienced delays in patient enrollment due to the COVID-19 pandemic. If the COVID-19 pandemic continues and persists for an extended period of time or increases in severity, the Company could experience significant disruptions to its clinical development timelines and, if we experience delays in patient enrollment and deems it necessary or advisable to improve patient recruitment by, among other things, opening additional clinical sites, we could incur increased clinical program expenses. Any such disruptions or delays would, and any such increased clinical program expenses could, adversely affect our business, financial condition, results of operations and growth prospects.

Figure 1: Aravive Pipeline

First Oncology Indication - Ovarian Cancer and Current Market Opportunity

The decision to select high grade platinum-resistant recurrent ovarian cancer as our first indication was based upon the preclinical data that we generated with batiraxcept in PROC, the fact that high grade serous ovarian cancer tumors are highly AXL positive and the high unmet medical need for effective therapies to treat PROC. In August 2018, the FDA granted Fast Track Designation to batiraxcept for PROC.

Ovarian cancer ranks fifth in cancer deaths among women in the U.S., accounting for more deaths than any other cancer of the female reproductive system. According to the American Cancer Society, it is estimated that in 2022 there will be approximately 19,880 new cases of ovarian cancer diagnosed in the United States and approximately 12,810 ovarian cancer deaths in the United States. A woman's risk of getting ovarian cancer during her lifetime is about 1 in 78. Her lifetime chance of dying from ovarian cancer is about 1 in 108. Due to the nonspecific nature of disease symptoms, currently approximately 70% of ovarian cancer patients are diagnosed with advanced-stage disease, at which point their prognosis is poor. Improving the ability to detect ovarian cancer early is a research priority, given that women diagnosed with localized-stage disease have more than a 90% five-year survival rate.

Decision Resources Group, LLC or DRG in its January 2021 Key Findings in Ovarian Cancer, Disease Landscape and Forecast Report estimates the total ovarian cancer market to grow in the major markets (United States, France, Germany, Italy, Spain, the United Kingdom and Japan) at an annual rate of 12.5% from nearly $3 billion in 2019 to nearly $10 billion in 2029.

Treatment of PROC patients (patients whose disease progresses within 6 months of their last platinum-based therapy) on their second- and third-line of therapy consists of a nonplatinum monotherapy as sequential single-agent salvage chemotherapy has been shown to be superior to multiagent chemotherapy in this setting (DRG- December 2019 Ovarian Cancer Disease Landscape and Forecast). Widely used single-agent therapies in this population include gemcitabine, pegylated-liposomal doxorubicin, topotecan, and paclitaxel ("PAC") with or without bevacizumab or Avastin. The median progression free survival ("PFS") rate for patients given standard of care (PAC or doxil/pegylated liposomal doxorubicin ("PLD")) to treat platinum-resistant recurrent ovarian cancer is 3-4 months, with a median overall survival ("OS") of 9-12 months (*A. Davis et al. / Gynecologic Oncology 133 (2014) 624–631*). Adding bevacizumab to the chemotherapy resulted in a median PFS of 6.7 months (*Pujade-Lauraine, et al., J Clin Oncol 32:1302-1308*) but there was no OS benefit (*Stockler MR, et al. J Clin Oncol. 2014 May 1;32(13):1309-16).* In the United States, another treatment option in third-line platinum-resistant/refractory ovarian cancer are poly ADP ribose polymerase inhibitors (PARPi) which are indicated as a monotherapy for the treatment of patients with deleterious BRCA mutation (germline and/or somatic) with advanced ovarian cancer who have been treated with two or more chemotherapies. There is no standard of care for patients with non-BRCA mutated/ HR proficient ovarian cancer in the fourth- and subsequent-line settings. The majority of these patients have become platinum-resistant and are typically managed with monotherapy chemotherapy treatments.

Overview of Our Phase 1b Clinical Trial for the Treatment of Patients with PROC

In December 2018, following a normal healthy volunteer trial that identified a dose of 10mg/kg batiraxcept as sufficient to suppress serum GAS6 levels for a two-week period, we began treating patients in our Phase 1b clinical trial combining 10mg/kg (administered every 2 weeks) batiraxcept with standard-of-care therapies (specifically, PAC or PLD) in patients with PROC.

The Phase 1b clinical trial was designed, in part, to confirm the dosing regimen predicated on the Phase 1 trial in healthy volunteers and to identify the dose to investigate in later stage trials. The primary objective of the Phase 1b clinical trial was to assess the safety and tolerability of batiraxcept in combination with PAC or PLD, and secondary objectives were to assess PK and pharmacodynamics (serum GAS6 and soluble AXL ("sAXL") levels), efficacy, and potential immunogenicity of batiraxcept. Exploratory objectives included efficacy endpoints in biomarker (GAS6, AXL) defined populations based on expression of those biomarkers in serum and/or tumor tissue.

In September 2019, we presented positive data from the initial 12 patients of the Phase 1b clinical trial in a late breaking oral presentation at the European Society for Medical Oncology Congress in Barcelona and based upon our analysis of the data decided to study higher doses of the drug and expanded the Phase 1b trial to study 15 mg/kg and 20 mg/kg dose levels.

Data from the Phase 1a and 1b Clinical Trials of batiraxcept

The safety of batiraxcept was studied in 84 subjects, including 31 healthy volunteers in a Phase 1a clinical trial and 53 PROC patients in a Phase 1b clinical trial (40 in 10 mg/kg cohort, 6 in 15 mg/kg cohort, and 7 in 20 mg/kg cohort). The primary objective of the Phase 1b clinical trial was to assess safety of batiraxcept in combination with PAC or PLD. Secondary endpoints included objective response rate ("ORR"), CA-125 response, clinical benefit rate, PFS, OS, PK profile, GAS6 serum levels, and anti-drug antibody titers.

Safety Data: Analysis of all safety data to date demonstrates that batiraxcept has been generally well-tolerated with no dose-limiting toxicities or unexpected safety signals. There were no batiraxcept-related significant adverse events reported. There were two types of adverse events that were considered related to batiraxcept, as determined by an independent medical monitor: infusion reactions and fatigue. A premedication regimen was designed and implemented during the trial to manage potential infusion reactions.

Pharmacokinetics: Prior data analysis of 31 patients from the 10 mg/kg cohort showed that blood trough levels of batiraxcept demonstrated statistically significant correlation with clinical activity, as patients who achieved minimal efficacious concentration (MEC) >13.8 mg/L demonstrated a greater likelihood of response and prolonged PFS. Updated modeling using actual data from all enrolled patients demonstrated that the 20 mg/kg dose is not predicted to improve PFS relative to the 15 mg/kg dose so the dose of 15 mg/kg was selected as the recommended Phase 2 dose or RP2D for batiraxcept.

Clinical Activity: While the Phase 1b clinical trial was a safety trial and not powered to demonstrate efficacy, the investigator-assessed best response or RECIST V1.1 to batiraxcept across all cohorts supports promising clinical activity. The Phase 1b study data is summarized as follows:

- All doses of batiraxcept (10, 15 and 20mg/kg) were well-tolerated and the safety profile of the combination with PAC or PLD was consistent with the safety profile of PAC or PLD alone. Infusion reactions were noted, likely related to batiraxcept infusion and they were managed by a premedication regimen.

- Batiraxcept plus PAC appeared to perform better than batiraxcept plus PLD: across all cohorts, batiraxcept plus PAC data show an ORR of 35% (8/23, including 2 CRs) compared to ORR of 11% (3/28) in batiraxcept plus PLD.

- While not powered to demonstrate efficacy, drug exposure levels correlated with clinical response as there was a statistically significant relationship between batiraxcept trough levels and PFS, supporting the use of higher dose than 10 mg/kg of batiraxcept. Additionally, batiraxcept combined with PAC had better clinical responses in patients whose trough levels were above the MEC of 13.8 mg/L compared to those patients whose trough levels were below the MEC.

- Batiraxcept demonstrated meaningful benefit in patients with later lines of therapy and showed improved clinical benefit over published data showing response for patients who were on their third and fourth lines of therapy (*Bruchim et al, European Journal of Obstetrics & Gynecology and Reproductive Biology 166 (2013) 94–98)* or who progressed in less than 3 months following their last platinum-containing regimen (*Kobayashi-Kato et al., Cancer Chemotherapy and Pharmacology (2019) 84:33-39 37)*.

- Batiraxcept plus chemo appeared to perform better in patients without previous exposure to bevacizumab.

    - In a subgroup analysis of patients who had not been previously exposed to bevacizumab in their prior lines of therapy, batiraxcept plus chemotherapy yielded an ORR of 60% (6/10 including 2 CR) when combined with PAC and an ORR of 19% (3/16) when combined with PLD. For reference, control arms of the third-party AURELIA trial of bevacizumab (NCT00976911) showed ORR of 30.2% (out of 55 patients total) with PAC alone and 7.8% (out of 64 patients total) with PLD alone.

    - Patients who received 10 or 15 mg/kg in combination with PAC and whose trough level was above the MEC of 13.8mg/L demonstrated clinical activity (67% response rate, 7.7 months PFS, and 19.3 months OS) greater than what was reported for PAC alone (bevacizumab naïve) patients in the AURELIA trial: 30.2% ORR (no CR reported); 3.9 months mPFS; and 13.2 months mOS (*Poveda et al, Journal of Clinical Oncology, Vol 33, No 32 (November 10), 2015: pp 3836-3838).*

- Serum levels of sAXL/GAS6 ratio related to response to batiraxcept and may identify PROC patients more likely to respond to batiraxcept chemotherapy combinations.
    - In the entire Phase 1b cohort, patients with a high sAXL/GAS6 ratio had 33% ORR (11/33) versus 0% ORR (0/15) in patients with a low sAXL/GAS6 ratio.
    - This biomarker will be investigated in every clinical trial, including the P3 PROC trial, to see if it can be validated for use to enrich the patient population likely to respond.

Table 1: Clinical Activity Data for 10mg/kg and 15mg/kg Patients whose First Trough Level was above the MEC of 13.8mg/L

	PAC (N = 10)
Median PFS (months)	7.5
ORR	5 (50% [2CRs^ (20%])
Median Duration of Response (DoR) among those who responded (months)	7.4
Median OS (months)	19.0

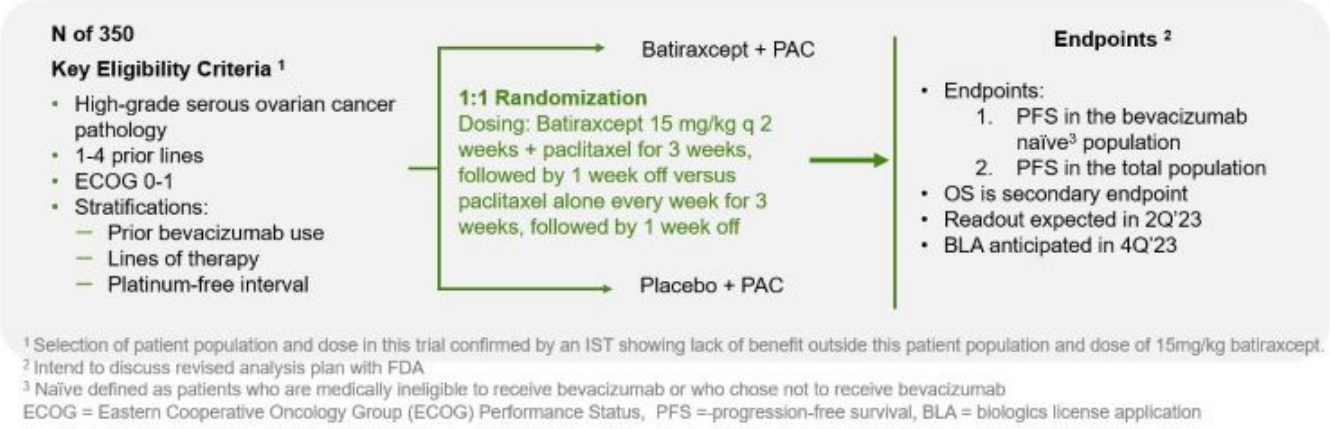
- Batiraxcept treatment alone demonstrated an ability to maintain tumor response. Three patients during the P1b clinical trial maintained their response for 3-6 months following discontinuation of chemotherapy and while remaining on batiraxcept treatment alone. The tumor in one patient in the 15mg/kg group had completely responded (CR) and tumors in the other 2 patients in the 10 mg/kg group had PR while remaining on batiraxcept treatment alone.

- Two patients whose responses (CR and PR) were maintained on batiraxcept treatment alone for at least 6 months following discontinuation of chemotherapy missed their next dose of batiraxcept (one because she was hospitalized with COVID and one because she wanted to take a vacation) and their tumors showed progression at the next visit. These data suggest the responses these patients experienced was likely attributable to batiraxcept treatment.

Phase 3 Registrational Trial Design in PROC

On November 19, 2020, we announced that we had received guidance from the FDA on a registrational Phase 3 trial design for batiraxcept in PROC. The FDA feedback received was that this trial, if successful, could support full approval of batiraxcept for the treatment of PROC. No further preclinical or clinical pharmacology studies are required at this time. The global, randomized, double-blind, placebo-controlled is designed to evaluate efficacy and tolerability of batiraxcept at a dose of 15 mg/kg in combination with PAC. The initial trial was an adaptive designed trial which included an interim analysis that would allow an additional 100 bevacizumab naïve patients to be enrolled to balance the bevacizumab populations should the interim analysis suggest additional bevacizumab naïve patients are potentially needed to increase the chance for success at the end of the trial. The pivotal, adaptive Phase 3 trial was expected to enroll approximately 300-400 patients with high-grade serous ovarian cancer who have received one to four prior lines of therapy. In March 2022, we announced that we are seeking to omit the interim analysis in the trial as we believe we can enroll the number of bevacizumab naïve patients needed to have a potentially successful study. We are in the process of communicating with the FDA regarding proposed changes to the trial's statistical analysis plan. This global trial is planned to be conducted at approximately 165 sites in the U.S., Canada, China, and Europe. The primary endpoint for the trial is PFS, and secondary endpoints include OS, ORR based on RECIST 1.1, safety and tolerability, DoR, quality of life, clinical benefit rate, and pharmacokinetic and pharmacodynamic profile. Exploratory biomarkers include serum GAS6, serum sAXL and batiraxcept drug levels. We dosed our first patient in the trial in April 2021.

Figure 2: Phase 3 batiraxcept -OC-004 Design



Second Oncology Indication-ccRCC

ccRCC and Current Market Opportunity

The decision to select ccRCC as our second indication was based upon the strong preclinical data that we generated with batiraxcept and the fact that AXL expression in primary tumors of ccRCC patients has been shown in third party studies as well as our own studies (*Rankin et al, PNAS September 16, 2014 vol. 111 no. 37 13373–13378*), to correlate with aggressive tumor behaviors.

Kidney cancer is a leading cause of cancer-related deaths in the United States and is among the 10 most common cancers in both men and women. Metastasis to distant organs including the lung, bone, liver and brain is the primary cause of death in kidney cancer patients as only 12% of metastatic kidney cancer will survive past 5 years. According to the American Cancer Society, it is estimated that there will be approximately 79,000 new cases of kidney cancer and 13,920 people will die from this disease in the United States during 2022.

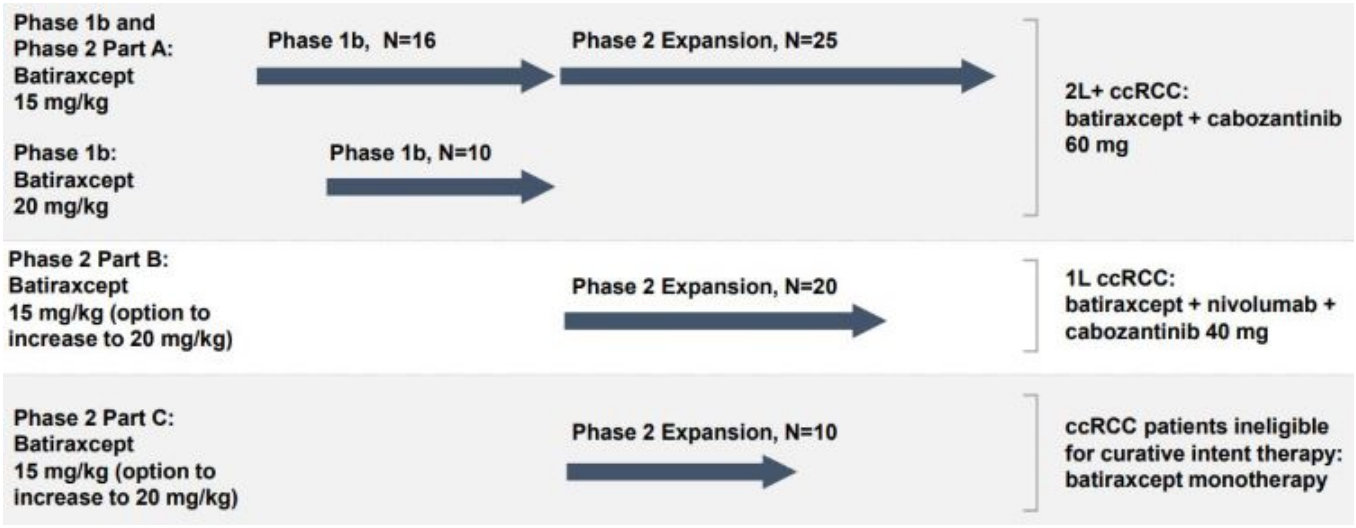
ccRCC is a cancer of the kidney. The name "clear cell" refers to the appearance of the cancer cells when viewed with a microscope. ccRCC occurs when cells in the kidney quickly increase in number, creating a lump (mass). Though the exact cause of ccRCC is unknown, smoking, excessive use of certain medications, and genetic predisposition conditions, e.g., von Hippel Lindau syndrome which involves genetic mutation in VHL, a tumor suppressor gene controlling tumor initiation in ~90% of ccRCC tumors, may contribute to the development of this type of cancer.

Treatment often begins with surgery to remove as much of the cancer as possible, and may be followed by radiation therapy, chemotherapy, biological therapy, or targeted therapy. Most kidney cancer is chemotherapy and radiation resistant, resulting in a large unmet need for treatment options. As reported in Decision Resources Group, LLC's December 2019 Report on The Landscape & Forecast of Renal Cell Carcinoma, nivolumab and cabozantinib have experienced strong uptake as second-line therapies since their FDA approvals (in 2015 and 2016, respectively). However, DRG anticipates that nivolumab's second-line patient shares, across the major markets, will begin to decline from 29-35% in 2018 to 22-27% in 2028, in part owing to its first-line label expansion in combination with ipilimumab and then later as other combination regimens with PD-1/PD-L1 inhibitors enter the first-line setting. In contrast, cabozantinib's second-line patient share as monotherapy is expected to steadily increase over the forecast period as its use in the first-line setting correspondingly declines, and it solidifies its position as the treatment of choice following a first-line immune checkpoint inhibitor combination. By 2023, it is estimated by DRG that cabozantinib will overtake nivolumab as the second-line sales and patient-share leader in all major markets; in 2028, it is expected to earn patient shares of 31-43% across the major markets. Similarly, DRG expects axitinib's second-line patient share will decline over the forecast period, corresponding to the uptake of cabozantinib and the notable uptake of pembrolizumab plus axitinib in the first-line setting; its major-market patient shares will then stabilize to 6-16% between 2024 and 2028. These assumptions in renal cell carcinoma suggest the greatest need may be with respect to second line therapies and in combination with cabozantanib.

Planned Phase 1b/ 2 Clinical Trial

In February 2019, we announced our plans to develop batiraxcept in our second oncology indication, ccRCC. On January 13, 2020, we announced that we had received FDA clearance of our IND for investigation of our lead candidate, batiraxcept, in the treatment of ccRCC.

Figure 3: Phase 1b/2 Trial Designed to Accelerate Development in ccRCC



The Phase 1b trial is evaluating batiraxcept at doses of 15 mg/kg and 20 mg/kg, plus cabozantinib 60 mg daily in previously treated (2L+) patients with ccRCC. Prior treatment with cabozantinib was not allowed. The primary objective is safety; secondary and exploratory objectives include identification of the recommended phase 2 dose (RP2D), overall response rate (ORR), and duration of response (DOR). Given baseline levels of serum soluble AXL (sAXL)/GAS6 correlated to clinical activity in the Company's Phase 1b trial of batiraxcept in platinum-resistant ovarian cancer, one of the objectives of the ccRCC trial is to correlate baseline sAXL/GAS6 with response in patients with ccRCC treated with batiraxcept plus cabozantinib. We dosed two cohorts of patients, one at the 15 mg/kg dose and the second at 20mg/kg dose. A review of the Phase 1b data demonstrates that 15mg/kg batiraxcept is an appropriate dose to suppress serum GAS6 levels in these patients being treated with cabozantinib and that 20mg/kg batiraxcept does not provide additional clinical activity beyond that seen with 15mg/kg batiraxcept, consistent with the modeling done using the Phase 1b PROC data.

In January 2022, the Company announced the first patient was dosed in the Phase 2 portion of the ccRCC trial. The Phase 2 portion of the Phase 1b/2 clinical trial of batiraxcept in ccRCC is an open-label study in which 55 patients are anticipated to enroll across three parts. Part A is expected to enroll approximately 25 patients and will investigate batiraxcept 15 mg/kg in combination with cabozantinib in 2L+ ccRCC patients. Part B is expected to enroll approximately 20 patients and evaluate batiraxcept 15 mg/kg in combination with standard of care nivolumab and cabozantinib in first-line ccRCC patients. Part C is expected to evaluate batiraxcept 15 mg/kg monotherapy in approximately 10 patients with ccRCC who are not eligible for curative intent therapies. The primary endpoint of each part of the Phase 2 portion of the trial is ORR and key secondary endpoints include DoR, PFS, and OS. The Phase 2 portion of the ccRCC clinical trial will also explore batiraxcept effects on biomarkers (sAXL and GAS6) in serum.

As of February 4, 2022, 26 ccRCC patients have been treated with batiraxcept at doses of 15 mg/kg (n=16) and 20 mg/kg (n=10), plus cabozantinib 60 mg daily in previously treated (2L+) patients with ccRCC. Demographics of the evaluated 26 patients are representative of a 2L+ ccRCC population, with all patients having received a prior immunotherapy. Key findings include:

- No dose limiting toxicities observed at either the 15 mg/kg or 20 mg/kg batiraxcept dose in combination with cabozantinib.
- At a median follow-up of 4.9 months on February 4, 2022, 92% of patients remain on study.
- Best overall response rate (ORR) in the ITT population is 46% (12/26).
    - In the 15 mg/kg population, best ORR is 56% (9/16).
    - In the 20 mg/kg population, best ORR is 30% (3/10).
    - No patient has had progressive disease as their best response.
- The 6-month progression-free survival (PFS) rate in the ITT population is 79%.
- Median duration of response (DOR) has not been reached; the 3-month DOR is 100%.

Biomarker Data

As previously reported, a key finding from the Company's Phase 1b trial of batiraxcept in platinum-resistant ovarian cancer is an observable correlation of baseline levels of serum soluble AXL (sAXL)/GAS6 to clinical activity. As such, one of the objectives of the ongoing Phase 1b/2 ccRCC trial is to measure the correlation of baseline sAXL/GAS6 with radiographic response in patients with ccRCC treated with batiraxcept plus cabozantinib. Ratios of sAXL/GAS6 were evaluated retrospectively.

Among the 26 patients treated in the ccRCC trial, 25 were evaluable for baseline sAXL/GAS6. A high ratio optimized a patient's ability to respond to batiraxcept plus cabozantinib. Key findings from biomarker high patients include:

- Best ORR rate in the biomarker high population is 63% (12/19).
    - In the 15mg/kg population, best ORR is 75% (9/12)
    - In the 20mg/kg population, best ORR is 43% (3/7)
- The 6-month PFS rate in the biomarker high population is 77%, with a 6-month PFS rate of 91% in the 15 mg/kg biomarker high group.
- Median DOR has not been reached in the biomarker high subgroup; the 3-month DOR is 100%.

The safety and clinical activity data continue to support 15 mg/kg batiraxcept as an appropriate dose to study in combination with cabozantinib in the Phase 2 ccRCC portion of the study.

Third Oncology Indication-Advanced or Metastatic Pancreatic Adenocarcinoma (PA)

The pancreas is a gland about 6 inches long that is shaped like a thin pear lying on its side and it is in the abdomen near the stomach, intestines, and other organs. The pancreas has two main jobs in the body: 1) to make juices that help digest (break down) food; and 2) to make hormones, such as insulin and glucagon, that help control blood sugar levels. Both of these hormones help the body use and store the energy it gets from food. The digestive juices are made by exocrine pancreas cells and the hormones are made by endocrine pancreas cells. About 95% of pancreatic cancers begin in exocrine cells and the most common pancreatic exocrine tumors are called adenocarcinomas.

According to the American Association for Cancer Research ("AACR"), pancreatic cancer is difficult to detect and diagnose because there aren't any noticeable signs or symptoms in the early stages of pancreatic cancer, the symptoms are similar to those of many other illnesses, and the pancreas is hidden behind other organs. Pancreatic cancer is the seventh leading cause of cancer death worldwide. There were approximately 495,800 new cases of pancreatic cancer and 466,000 deaths from the disease worldwide in 2020. The National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program estimates that there will be approximately 60,430 new cases of pancreatic cancer and 48,220 deaths from the disease in the U.S. in 2021. Pancreatic cancer typically has a poor prognosis, and the five-year survival rate is approximately 11%. Per AACR, pancreatic cancer is projected to become the third leading cause of cancer death worldwide by 2025 and the second leading cause of cancer death in the U.S. by 2030.

Decision Resources Group, LLC or DRG in its December 2019 Pancreatic Cancer Disease Landscape and Forecast reports the first-line metastatic population is the largest drug-treatable population in pancreatic cancer. Correspondingly, the first-line metastatic population had the highest therapy sales ($901 million in 2018, with all but 62 million from the pancreatic exocrine tumor population), accounting for 53% of the total pancreatic cancer therapy market. By 2028, these sales will fall short by more than $100 million ($764 million in 2028), mainly because most products prescribed for metastatic pancreatic adenocarcinoma in the first-line have become generically available and due to failures of several highly anticipated late-phase pipeline drugs. However, there is a clear need for additional therapies and there is a clear trend developing towards a combinatorial approach as a substantial percentage of early-phase studies are being conducted with two or more investigational agents. The addressable population (i.e., eligible to receive gemcitabine + nab-paclitaxel as first-line treatment) across the US and 5 major EU regions is estimated to be approximately 38,000.

On August 9, 2021, we announced that we had dosed the first patient in the Phase 1b portion of our Phase 1b/2 of AVB-500 as a first-line therapy in combination with gemcitabine and nab-paclitaxel (Abraxane®) in patients with advanced or metastatic pancreatic adenocarcinoma eligible to receive gemcitabine and nab-paclitaxel combination therapy. The Phase 1b portion of the clinical trial will evaluate safety, tolerability, PK, pharmacodynamics, and clinical activity in approximately 20 patients dosed with 15 mg/kg of batiraxcept in combination with gemcitabine and nab-paclitaxel. The randomized, controlled Phase 2 portion of the clinical trial is designed to evaluate approximately 60 patients dosed with 15 mg/kg of batiraxcept as a first-line therapy in combination with gemcitabine and nab-paclitaxel versus gemcitabine and nab-paclitaxel alone. The primary endpoint of the Phase 2 portion of the trial is PFS. The secondary endpoints are ORR, DoR, clinical benefit rate, safety and OS, and the exploratory endpoints are PK and pharmacodynamics.

In February 2022, we provided updated safety and clinical activity data from the pancreatic adenocarcinoma as of February 4, 2022. The safety profile of batiraxcept in combination with gemcitabine plus nab-paclitaxel was consistent with the safety profile of gemcitabine plus nab-paclitaxel alone. Thirteen patients had been followed for at least 8 weeks and 4 out of 13 (31%) had a best response of partial response, 5 out 13 (38%) had best response of stable disease and 4 out of 13 patients (31%) had best response of progressive disease.

Investigator Sponsored Trials

In May 2019 we entered into an institution sponsored clinical trial agreement with M.D. Anderson Cancer Center for the use of, and our supply of, batiraxcept, in combination with AstraZeneca Pharmaceuticals LP's medicinal product durvalumab in a Phase 1/2 trial being conducted by the M.D. Anderson Cancer Center for the treatment of patients with platinum-resistant, recurrent epithelial ovarian cancer. In March 2020, we announced that the first patient was dosed in a Phase 1/2 trial for the use of, and our supply of, batiraxcept, in combination with EMD Serono's medicinal product avelumab being conducted by the University of Oklahoma for the treatment of patients with advanced urothelial cancer (COAXIN trial).

Strategic Collaborations

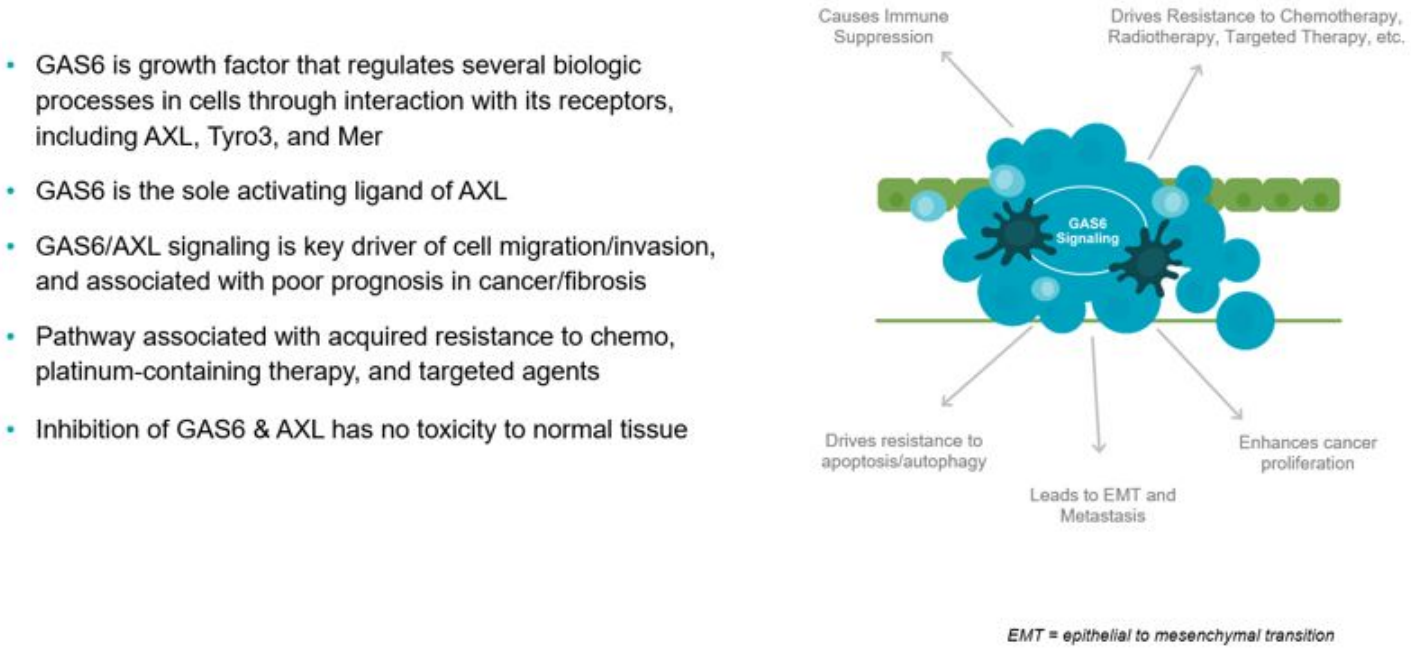
In April 2020, we entered into a license and collaboration agreement with WuXi, the objective of which is to identify and develop novel high-affinity bispecific antibodies against CCN2, also known as CTGF, implicated in cancer and fibrosis and identified from a similar target discovery screen that identified the significance of the AXL/GAS6 pathway in cancer. The goal is to generate a best-in-class therapeutic targeting desmoplasia and tumor growth in the clinic in 2023.

On November 6, 2020, we entered into the 3D Medicines Agreement, whereby we granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance for the diagnosis, treatment or prevention of human oncological diseases, in the Territory.

GAS6-AXL Pathway

As illustrated in the following graphic, AXL receptor signaling plays an important role in multiple types of malignancies by promoting metastasis, cancer cell survival, resistance to treatments, and immune suppression.

Figure 4: GAS6 and AXL are Overexpressed in Many Cancers and Associated with Tumor Growth, Metastasis, Drug Resistance, and Poor Survival



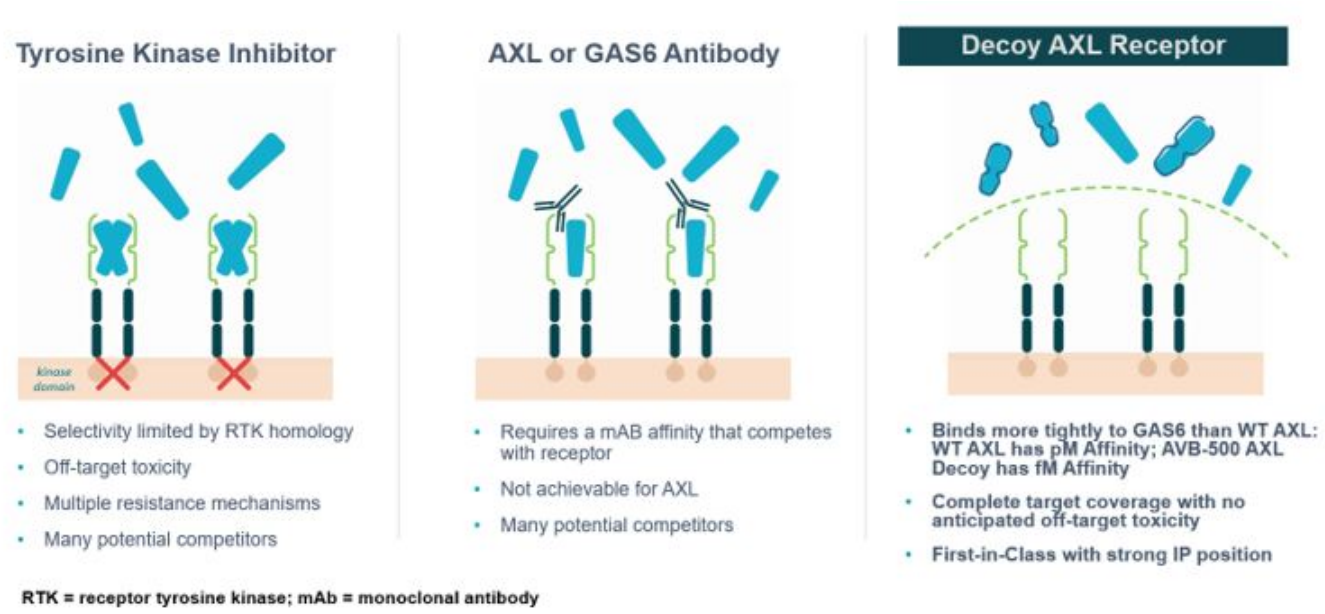
In preclinical studies, we have also identified high AXL expression on tumors resistant to the combination of radiotherapy and immunotherapy and that genetically inactivating AXL in tumors resistant to immunotherapy and radiotherapy restored anti-tumor immune response.

In preclinical studies conducted in Dr. Giaccia's laboratories at Stanford University, Dr. Giaccia was able to demonstrate that the immune response generated by loss of AXL leads to adaptive immune resistance through PD-L1 expression and Treg (regulatory T cells) infiltration. This resulted in tumors that became sensitive to checkpoint immunotherapy when they were previously resistant. Thus, GAS6-AXL pathway inhibitors, in combination with radiation or chemotherapy and immunotherapy, may be a promising treatment regimen and may restore anti-tumor immune response.

Aravive-S6 (AVB-S6)

AVB-S6 is comprised of a family of novel, high-affinity, soluble Fc-fusion proteins designed to block the activation of the GAS6-AXL signaling pathway by intercepting GAS6 and interfering with its binding to its receptor AXL. AVB-S6 proteins have been engineered to have approximately 50 to 200 times greater affinity for human GAS6 compared to the native AXL receptor, effectively sequestering GAS6 and abrogating AXL signaling. We believe this 'decoy receptor' approach is well suited for AXL inhibition compared to small molecule receptor tyrosine kinase inhibitors or antibodies, as illustrated by the following graphic.

Figure 5: Approaches to Inhibiting the GAS6/AXL Signaling Pathway



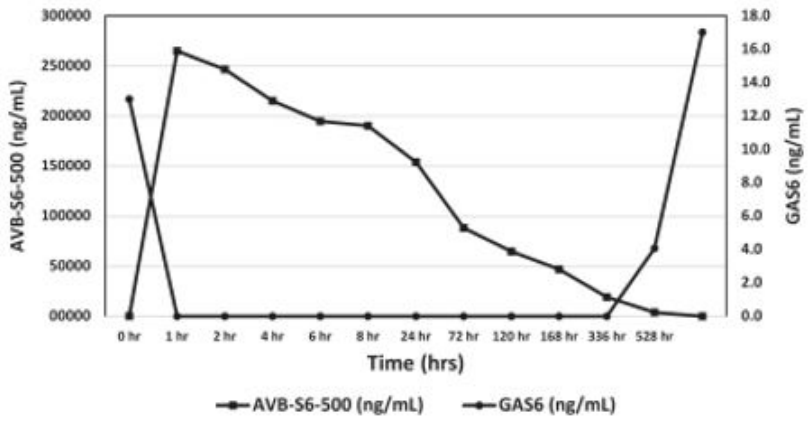
Preclinical Results

Our AVB-S6 proteins have been shown to bind GAS6 with higher affinity than the endogenous AXL protein and inhibit GAS6/AXL signaling. Initial preclinical pharmacology studies were conducted with a variety of engineered AVB-S6 proteins. The preclinical program demonstrated that high GAS6 binding affinity was critical and correlative with the ability of AVB-S6 to inhibit metastasis and disease progression *in vivo*. AVB-S6 proteins have demonstrated significant efficacy in mouse models of metastatic ovarian, breast, renal, and pancreatic cancers.

Biomarker

GAS6 expression in tumors has been reported to be an adverse prognostic factor in several cancers, including urothelial, ovarian, lung adenocarcinoma, gastric cancer, glioblastoma, oral squamous cell carcinoma, liver carcinoma, and renal cell carcinoma. In studies conducted by us, AVB-S6 proteins bind GAS6 with higher affinity than the endogenous AXL protein and prevent GAS6 signaling at the AXL receptor. Preclinical efficacy data for the AVB-S6 program demonstrated a relationship between reduced serum GAS6 and an anti-metastatic effect. We have developed an assay designed to measure GAS6 levels in the blood before and after dosing of our development candidate. In the presence of a pharmacologically active dose of AVB-S6, serum GAS6 has not been detectable. Thus, GAS6 levels in the blood of patients may be a pharmacodynamic biomarker that can aid AVB-S6 dose selection and potentially serve as a predictive biomarker for response to treatment with AVB-S6. Additionally, our Phase1b clinical trial identified a relationship between sAXL / GAS6 ratios as every patient that responded to treatment, regardless of chemotherapy being administered in combination, had a sAXL / GAS6 of >0.773. We will continue to explore these biomarkers in our other clinical trials.

The following graphic indicates the relationship between batiraxcept protein levels and GAS6 levels in blood from humans participating in the batiraxcept first in human trial.



Manufacturing

Manufacturing of our clinical trial material consists of three main phases, the production of bulk protein (drug substance), formulation/filling operations, and labelling/packaging operations of the finished product. The protein has been manufactured at high yield and with high purity. The clinical bulk drug substance is produced using industry standard manufacturing processes, as is the drug product.

Since September 2017, we have relied on WuXi, a third-party contract manufacturer to manufacture clinical bulk drug substance and drug product of batiraxcept using a cell line and process developed by our contract manufacturer that has been licensed to us on a non-exclusive basis. We have manufactured enough batiraxcept to dose patients through the planned Phase 3 ovarian cancer trial. The clinical bulk drug substance and drug product is manufactured pursuant to the terms of a five-year Master Manufacturing Services Agreement that we entered into with our contract manufacturer in July 2016, which agreement automatically renews for successive one (1) year periods, unless either party provides written notice to the other party of its desire not to renew at least 90 days prior to the expiration of the then-current term. The Master Manufacturing Services Agreement is terminable by us upon 45 days prior written notice, by our contract manufacturer upon 180 days prior written notice provided that all statements of work in progress at such time are completed and upon 60 days prior written notice upon a breach of the terms of the agreement if such breach is not cured within such 60-day period.

We have also contracted with an independent third party located in Texas for the labeling, packaging, and distribution of our injectable protein.

Our personnel have significant technical, manufacturing, analytical, quality and project management experience to execute and manage manufacturing process development, plus oversee the manufacture, testing, quality release, storage and distribution of drug products according to the current Good Manufacturing Practice ("cGMPs"), promulgated by the FDA and other regulatory requirements. The cGMP regulations include requirements relating to the organization of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, packaging and labeling controls, holding and distribution, laboratory controls, records and reports, and returned or salvaged products. Our facilities, and our third-party manufacturers, may be subject to periodic inspections by FDA and local authorities, which include, but are not limited to procedures and operations used in the testing and manufacture of our biological drug candidates to assess our compliance with applicable regulations. Failure to comply with statutory and regulatory requirements subjects a manufacturer to possible legal or regulatory action, including warning letters, the seizure or recall of products, injunctions, and consent decrees causing significant restrictions on or suspending manufacturing operations plus causing possible civil and criminal penalties. These actions could have a material impact on the availability of its biological drug candidates. Similar to contract manufacturers, we may encounter difficulties involving production yields, quality control and quality assurance, as well as shortages of qualified personnel.

Research and Development

We have made and will continue to make substantial investments in research and development. Our research and development expenses totaled approximately $37.5 million and $17.6 million for the years ended December 31, 2021 and 2020, respectively.

In the ordinary course of business, we enter into agreements with third parties, such as CROs, medical institutions, clinical investigators and contract laboratories, to conduct clinical trials and aspects of research and preclinical testing. These third parties provide project management and monitoring services and regulatory consulting and investigative services.

Competition

The biotechnology and pharmaceutical industries are characterized by intense competition to develop new technologies and proprietary products. We face competition from many different sources, including biotechnology and pharmaceutical companies, academic institutions, government agencies, as well as public and private research institutions. Any products that we may commercialize will have to compete with existing products and therapies as well as new products and therapies that may become available in the future.

At this time, there are no FDA or EMA approved therapies targeting GAS6. We believe this mechanism of action represents a novel approach to inhibiting tumor growth and metastasis, as well as addressing tumor immune evasion and resistance to other anticancer agents. Exelixis, Inc. markets cabozantinib, a Tyrosine Kinase Inhibitor which is the only currently marketed compound that inhibits AXL in addition to inhibiting several other kinases. We are aware of a number of companies focused on developing AXL inhibitors in various indications, including BerGenBio ASA, Astellas Pharma Inc., Mirati Therapeutics, Inc., Les Laboratoires Servier, SAS, Eli Lilly and Company, Bristol-Myers Squibb Company, Tolero Pharmaceuticals, Inc., Ignyta, Inc., as well as several companies addressing AXL inhibitors, and PARP 1/2 inhibitors and related signaling pathways.

Our competition may also include companies that are or will be developing therapies for the same therapeutic areas that we are targeting, including ovarian cancer, renal cell carcinoma and pancreatic cancer. Many of our potential competitors, alone or with their strategic partners may have substantially greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. These competitors also compete with us in recruiting and retaining qualified scientific and management personal, establishing clinical trial sites and patient registration for clinical trials, and in acquiring technologies complementary to, or necessary for our programs.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain approval from the FDA or other regulatory agencies for their products more rapidly than we may obtain approval for our product candidates, which could result in our competitors establishing a strong market position before our product is able to enter the market. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

License Agreement

In 2012, Aravive Biologics entered into an exclusive license agreement with Leland Stanford Junior University ("Stanford University") for intellectual and tangible property rights relating to biologic inhibitors for therapeutic targeting the receptor tyrosine kinase AXL. The license agreement was amended in 2012, 2015 and 2017 to modify certain of the stated milestones and expand the patent rights granted to Aravive Biologics. The term of the license is the length of the last to expire patent. The license agreement grants Aravive Biologics exclusive, worldwide rights to make, use or sell licensed materials based upon the following patent-related rights:

- U.S. patent application: Serial number PCT/US2012/069841, filed December 14, 2012; Serial Number 13/714,875, filed December 14, 2012 ; Serial Number PCT/US2013/074786, filed December 12, 2013; Serial Number 14/650,854, filed June 9, 2015; Serial Number PCT/US2015/066498, filed December 17, 2015; Serial Number 15/535,995, filed June 14, 2017; which patents are jointly owned with Private Aravive and all U.S. patents and foreign patents and patent applications based on the application; as well as all divisionals, continuations, and those claims in continuations-in-parts to the extent they are sufficiently described in the application, and any re-examinations or reissues of the foregoing.

- U.S. patent application: Serial Number PCT/US2011/022125, filed January 21, 2011; Serial Number 13/554,954, filed July 20, 2012; Serial Number 13/595,936, filed August 27, 2012; Serial Number 13/950,111, filed July 24, 2013; Serial Number 14/712,731, filed May 14, 2015; which patents are solely owned by Stanford University, and all U.S. patents and foreign patents and patent applications based on the application; as well as all divisionals, continuations, and those claims in continuations-in-parts to the extent they are sufficiently described in the application, and any re-examinations or reissues of the foregoing.

As consideration for the rights granted in the license agreement, Aravive Biologics is obligated to pay Stanford University yearly license fees and milestone payments, and a royalty based on net sales of products covered by the patent-related rights set forth above. More specifically, Aravive Biologics is obligated to pay Stanford University (i) annual license payments, (ii) milestone payments of up to an aggregate of $1,000,000 upon achievement of clinical and regulatory milestones, and (iii) royalties equal to a percentage (in the low single digits) of net sales of licensed products; provided that the annual license payments made will offset (and be credited against) any royalties due in such license year. In the event of a sublicense to a third party of any rights based on the patents that are solely owned by Stanford University, Aravive Biologics is obligated to pay royalties to Stanford University equal to a percentage of what Aravive Biologics would have been required to pay to Stanford University had it sold the products under sublicense itself. In addition, in such event Aravive Biologics is required to pay to Stanford University a percent of sublicensing income. The license agreement may be terminated by Stanford University upon 30 days written notice if Aravive Biologics breaches its obligations thereunder, including failing to make any milestone or other required payments or to exercise diligence to bring licensed products to market. In the event of a termination, Aravive Biologics will be obligated to pay all amounts that accrued prior to such termination. The license agreement also contains other customary clauses and terms as are common in similar agreements between industry and academia, including the licensee's agreement to indemnify Stanford University for any liabilities arising out of or related to the licensee's exercise of its rights under, or breach of, the license agreement, the reservation of the licensor of the right to use the licensed intellectual property rights for its internal, non-commercial purposes, limitations/disclaimers of various warranties.

Cancer Prevention and Research Institute of Texas (CPRIT) Grant

In 2016, Aravive Biologics was approved for a $20.0 million grant from CPRIT for development of AVB-S6. The CPRIT Grant is subject to customary CPRIT funding conditions including a matching funds requirement whereby Aravive Biologics was required to match $0.50 for every $1.00 from CPRIT. Consequently, Aravive Biologics was required to raise $10.0 million in matching funds, and it raised $11.4 million since 2016. The grant award, as is customary for all CPRIT awards, contains a requirement that Aravive Biologics pay CPRIT a tiered royalty on sales of commercial products developed using CPRIT funds equal to a low- to mid-single digit percentage of revenue until such time as CPRIT has been paid an aggregate amount equal to 400% of the grant award proceeds. After 400% of the grant award proceeds has been paid, Aravive Biologics will be obligated to pay CPRIT a royalty of less than one percent for as long as Aravive Biologics maintains government exclusivity. The CPRIT Grant contract terminated on November 30, 2019. After the termination date, we are not permitted to retain any unused grant award proceeds without CPRIT's approval, but our royalty and other obligations, including our obligation to repay the disbursed grant proceeds under certain circumstances, to maintain certain records and documentation, to notify CPRIT of certain unexpected adverse events and our obligation to use reasonable efforts to ensure that any new or expanded preclinical testing, clinical trials, commercialization or manufacturing related to any aspect of our CPRIT project take place in Texas, survive the termination of the agreement. In addition, if we relocate our principal place of business outside of Texas within the three-year period after the date of final payment of grant funds (which final payment was received in March 2020), we are required to repay to CPRIT all grant funds received. We have received all $20 million of the grant award proceeds and have expended all of the grant award proceeds by the agreement termination date.

3D Medicines Inc. Agreement

On November 6, 2020, we entered into the 3D Medicines Agreement, whereby we granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance, for the diagnosis, treatment or prevention of human oncological diseases, in the Territory.

Under the terms of the 3D Medicines Agreement, we received from 3D Medicines cash payments of $21 million (inclusive of $9 million in milestone payments) and are eligible to receive from 3D Medicines cash payments of up to an aggregate of $207 million (inclusive of $9 million in milestone payments) in clinical development, regulatory and commercial milestone payments. There can be no guarantee that any such milestones will in fact be met. We are obligated to make certain payments to Stanford University based on certain amounts received from 3D Medicines under the 3D Medicines Agreement pursuant to the existing license agreement by and between us and Stanford.

We will also be entitled to receive tiered royalties ranging from low double digits to mid-teens on sales in the Territory, if any, of products containing batiraxcept. Royalties are payable with respect to each jurisdiction in the Territory until the latest to occur of: (i) the last-to-expire of specified patent rights in such jurisdiction in the Territory; or (ii) ten (10) years after the first commercial sale of a product in such jurisdiction in the Territory. In addition, royalties payable under the Agreement will be subject to reduction on account of generic competition under certain specified conditions, with any such reductions capped at certain percentages of the amounts otherwise payable during the applicable royalty payment period.

- Under the terms and conditions of the 3D Medicines Agreement, 3D Medicines will be solely responsible for the development and commercialization of licensed products in the Territory.

- If either we or 3D Medicines materially breaches the 3D Medicines Agreement and does not cure such breach, the non-breaching party may terminate the 3D Medicines Agreement in its entirety. Either party may also terminate the 3D Medicines Agreement, upon written notice, if the other party files for bankruptcy, is dissolved or has a receiver appointed for substantially all of its property. We may terminate the 3D Medicines Agreement if 3D Medicines, its affiliates or its sublicensees challenges the validity or enforceability of any of our patents covering any of the licensed compounds or products or ceases substantially all development and commercialization of licensed products in the Territory for a specified period, subject to certain exceptions. 3D Medicines may also terminate the 3D Medicines Agreement for convenience provided certain notice is provided to us.

The Agreement contemplates that we will enter in ancillary arrangements with 3D Medicines, including a clinical supply agreement and a manufacturing technology transfer agreement.

In August 2021, 3D Medicines received approval from the CDE of the NMPA of the IND submitted by 3D Medicines to participate in our international batiraxcept Phase 3 PROC clinical trial.

Intellectual Property

We strive to protect and enhance the proprietary technology, inventions and improvements that are commercially important to our business, including seeking, maintaining, and defending patent rights. We also rely on trade secrets relating to our technology and know-how to develop, strengthen and maintain our proprietary position in the field of targeting the GAS6-AXL pathway for the identification and development of therapeutic candidates for cancer therapy and fibrosis. In addition, we rely on regulatory protection afforded through data exclusivity, market exclusivity and patent term extensions where available. We also utilize trademark protection for our company name and expect to do so for products and/or services as they are marketed.

Our commercial success will depend in part on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business; defend and enforce our patents; preserve the confidentiality of our trade secrets; and operate without infringing the valid enforceable patents and proprietary rights of third parties. Our ability to stop third parties from making, using, selling, offering to sell or importing our therapeutic candidates may depend on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our commercial products and methods of manufacturing the same.

Our patent position with respect to the GAS6-AXL program is comprised of nine comprehensive patent portfolios containing composition of matter claims relating to novel GAS6-binding fusion proteins, claims to reagents and diagnostic methods for determining susceptibility or likelihood of a tumor to become invasive and/or metastatic, and claims to the use of our novel fusion proteins for the treatment of various oncological conditions, as well as antiviral and antifibrotic disorders. Our license agreement with Stanford University provides us with exclusive rights to intellectual property, or IP, that is either solely owned by Stanford (Portfolio I below) or co-owned by Stanford and us (Portfolios II, III, and V below). We also have rights to IP that we solely own (Portfolio IV and VI-X below).

As of March 15, 2022, we have exclusive rights to 31 issued patents (including the 18 validated EP countries for Portfolio I), 2 Hong Kong recorded patents, one allowed application and one pending patent application that are the subject of the license agreement with Stanford University. The expiration date for those patents/patent applications is 2031. We also have exclusive rights to 58 issued patents (including the 36 validated EP countries for Portfolio III and the 7 validated EP countries for Portfolio V) and 2 pending applications that are jointly owned with Stanford University and that are the subject of the license agreement with Stanford. The expiration dates for those patents/patent applications range from 2033-2035. We have 1 issued patent and 15 pending applications that we solely own. The expiration dates for those patents range from 2035-2042. Additional details on our relevant portfolios is provided below:

- **Portfolio I**— “Inhibition of AXL Signaling in Anti-Metastatic Therapy” 13 Granted Patents*--US8618254, US9074192, US9266947, AU2011207381, CA2786149, CN-ZL201180014940, EP2525824 (*Validated in 18 EP countries), IN6649/CHENP/2012, JP5965322, KR 127996-6, RU2556822, ZA2012/04866, ZA2013/07676--2 Recorded Patents--HK 1242355 (Recorded), HK 1245806 (Recorded)--1 Pending Application ---- CN201610819620.7, 1 Allowed Application -- EP17159334.6

- **Portfolio II**— “Inhibition Of AXL/GAS6 Signaling in the Treatment Of Disease” 1 Granted Patent—US9,879,061

- **Portfolio III**— “Modified AXL Peptides and Their Use in Inhibition of AXL Signaling in Anti- Metastatic Therapy” 10 Granted Patents**--US9822347, US11136563, AU2013359179, AU2019210662, CA2894539, EP2931265 (**Validated in 18 EP countries), EP3326622 (**Validated in 18 EP countries), JP2015-547567, JP2018-154641, HK 1256071--1 Pending Application—US17/465,203

- **Portfolio IV**— “Antiviral Activity of GAS6 Inhibitor” 1 Granted US Patent--US10137173--1 Pending Application--CA2909609

- **Portfolio V**— “Antifibrotic Activity of GAS6 Inhibitor” 4 Granted Patents***--US10,876,176, AU2015364437, EP3233902 (*** Validated in 7 EP Countries), HK1244825--1 Pending Application CA2971406

- **Portfolio VI**— "Methods of Treating Metastatic Cancers Using Axl Decoy Receptors" 11 Pending Applications--US20200289613, AU2018359863, CA3080732, CN2018800840462, EP18872866.1, HK 62020020701.2, HK 62020020970.3, JP2020-523776, KR10-2020-7016082, MX/a/2020/007130, RU2020116224

- **Portfolio VII**— "Methods of Treating Immunoglobulin A Nephropathy (IgAN) Using Axl Decoy Receptors" PCT/US2020/022860—Abandoned-Business Decision

- **Portfolio VIII**— "Methods of Treating Clear Cell Renal Cell Carcinoma (ccRCC) Using Axl Decoy Receptors" –1 Pending Application--PCT/US2021/012176

- **Portfolio IX**— "Diagnostic Methods For Cancer Using AXL Decoy Receptors" 1 Pending Application—PCT/US2021/042124

- **Portfolio X**— "Methods Of Treating Locally Advanced Or Metastatic Pancreatic Adenocarcinoma Using AXL Decoy Receptors As First-line Therapy" 1 Pending Application—US63243113

In the future, we expect to continue prosecuting broader coverage of certain composition of matter applications. Additionally, we will seek to file new patents related to novel candidates, manufacturing, clinical formulations, dose, and indications, as well as evaluate the acquisition of other innovative IP.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the date of filing the non-provisional application. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office ("USPTO") in granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier-filed patent.

The term of a patent that covers an FDA-approved drug may also be eligible for patent term extension, which permits patent term restoration of a U.S. patent as compensation for the patent term lost during the FDA regulatory review process. The Hatch-Waxman Act permits a patent term extension of up to five years beyond the expiration of the patent. The length of the patent term extension is related to the length of time the drug is under regulatory review. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only one patent applicable to an approved drug may be extended. Moreover, a patent can only be extended once, and thus, if a single patent is applicable to multiple products, it can only be extended based on one product. Similar provisions are available in Europe and other foreign jurisdictions to extend the term of a patent that covers an approved drug. When possible, depending upon the length of clinical trials and other factors involved in the filing of a BLA, we expect to apply for patent term extensions for patents covering its therapeutics candidates and their methods of use.

We may rely, in some circumstances, on trade secrets to protect our technology. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these procedures, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our consultants, contractors or collaborators use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Government Regulation

Federal, state and local government authorities in the United States and in other countries extensively regulate, among other things, the research, development, testing, manufacturing, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, post-approval monitoring and reporting, marketing and export and import of biological and pharmaceutical products such as those we are developing. Our product candidates must be approved by the FDA before they may be legally marketed in the United States and by the appropriate foreign regulatory agencies before they may be legally marketed in foreign countries. The process for obtaining regulatory marketing approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources.

U.S. Drug Approval Process

In the United States, the FDA regulates pharmaceutical and biological products under the Federal Food, Drug and Cosmetic Act, Public Health Service Act (the "PHSA"), and implementing regulations. Products are also subject to other federal, state and local statutes and regulations. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. FDA sanctions could include, among other actions, refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls or withdrawals from the market, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a drug or biological product may be marketed in the United States generally involves the following:

- completion of nonclinical laboratory tests and animal studies according to good laboratory practices, or GLPs, and applicable requirements for the humane use of laboratory animals or other applicable regulations;
- submission to the FDA of an Investigational New Drug which must become effective before human clinical trials may begin;
- performance of adequate and well-controlled human clinical trials according to the FDA's regulations commonly referred to as good clinical practices, or GCPs, and any additional requirements for the protection of human research subjects and their health information, to establish the safety and efficacy of the proposed product for its intended use;
- submission to the FDA of a Biologics License Application ("BLA") for marketing approval that meets applicable requirements to ensure the continued safety, purity, and potency of the product that is the subject of the BLA based on results of nonclinical testing and clinical trials;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities where the biological product is produced, to assess compliance with cGMP, to assure that the facilities, methods and controls are adequate to preserve the product's identity, strength, quality and purity;
- potential FDA audit of the nonclinical trial and clinical study sites that generated the data in support of the BLA; and
- FDA review and approval, or licensure, of the BLA.

Before testing any biological development candidate in humans, the candidate enters the preclinical testing stage. Preclinical tests, also referred to as nonclinical studies, include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies to assess the potential safety and activity of the candidate. The conduct of the preclinical tests must comply with federal regulations and requirements including GLPs. The clinical trial sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of the IND. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials and places the trial on a clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a biological product candidate at any time before or during clinical trials due to safety concerns or non-compliance. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only under terms authorized by the FDA. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such trials.

Clinical trials involve the administration of the biological product candidate to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety, including stopping rules that assure a clinical trial will be stopped if certain adverse events should occur. Each protocol and any amendments to the protocol must be submitted to the FDA as part of the IND. Clinical trials must be conducted and monitored in accordance with the FDA's regulations composing the GCP requirements, including the requirement that all research subjects provide informed consent. Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the form and content of the informed consent that must be signed by each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. Human clinical trials are typically conducted in three sequential phases; these phases may overlap or be combined:

- *Phase 1*. The biological product is initially introduced into healthy human volunteers and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients with the targeted disease.

- *Phase 2*. The biological product is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.

- *Phase 3*. Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency, and safety in an expanded patient population at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk to benefit ratio of the product and provide an adequate basis for product labeling.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data, and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND safety reports must be promptly submitted to the FDA and the investigators for serious and unexpected adverse events, any findings from other studies, tests in laboratory animals or in vitro testing that suggest a significant risk for human subjects, or any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. The sponsor must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, if at all. The FDA or the sponsor or its data safety monitoring board may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to subjects.

Concurrently with clinical trials, companies usually complete additional studies and must also develop additional information about the physical characteristics of the biological product as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents with use of biological products, the PHSA emphasizes the importance of manufacturing control for products whose attributes cannot be precisely defined. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other criteria, the sponsor must develop methods for testing the identity, strength, quality, potency and purity of the final biological product. Additionally, appropriate packaging must be selected and tested, and stability studies must be conducted to demonstrate that the biological product candidate does not undergo unacceptable deterioration over its shelf life.

U.S. Review and Approval Processes

After the completion of clinical trials of a biological product, FDA approval of a BLA must be obtained before commercial marketing of the biological product. The BLA must include results of product development, laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information. The FDA may grant deferrals for submission of data, or full or partial waivers. The testing and approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all.

Under the Prescription Drug User Fee Act, or PDUFA, as amended, each BLA must be accompanied by a significant user fee. The FDA adjusts the PDUFA user fees on an annual basis. PDUFA also imposes an annual program fee on approved biological products. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. No user fees are assessed on BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

The FDA has a Fast Track program that is intended to expedite or facilitate the process for reviewing new drugs and biological products that meet certain criteria. Specifically, new biological products are eligible for Fast Track designation if they are intended to treat a serious or life-threatening condition and demonstrate the potential to address unmet medical needs for the condition. Fast Track designation applies to the combination of the product and the specific indication for which it is being studied. For a Fast Track biological product, the FDA may consider review of completed sections of a BLA on a rolling basis provided the sponsor provides, and the FDA accepts, a schedule for the submission of the completed sections of the BLA. Under these circumstances, the sponsor pays any required user fees upon submission of the first section of the BLA. A Fast Track designated drug candidate may also qualify for priority review, under which the FDA reviews the BLA in six months rather than ten months after it is accepted for filing.

Within 60 days following submission of the application, the FDA reviews a BLA submitted to determine if it is substantially complete before the agency accepts it for filing. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission, and may request additional information. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review of the BLA. The FDA reviews the BLA to determine, among other things, whether the proposed product is safe, potent, and/or effective for its intended use, and has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMP to assure and preserve the product's identity, safety, strength, quality, potency and purity. The FDA may refer applications for novel biological products or biological products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions. During the biological product approval process, the FDA also will determine whether a Risk Evaluation and Mitigation Strategy, or REMS, is necessary to assure the safe use of the biological product. If the FDA concludes a REMS is needed, the sponsor of the BLA must submit a proposed REMS. The FDA will not approve a BLA without a REMS, if required.

Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure that the clinical trials were conducted in compliance with IND trial requirements and GCP requirements. To assure cGMP and GCP compliance, an applicant must incur significant expenditure of time, money and effort in the areas of training, record keeping, production, and quality control.

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval and deny approval. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. If the agency decides not to approve the BLA in its present form, the FDA will issue a complete response letter that describes all of the specific deficiencies in the BLA identified by the FDA. The deficiencies identified may be minor, for example, requiring labeling changes, or major, for example, requiring additional clinical trials. Additionally, the complete response letter may include recommended actions that the applicant might take to place the application in a condition for approval. If a complete response letter is issued, the applicant may either resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application.

If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product.

Further, the FDA may require that certain contraindications, warnings or precautions be included in the product labeling. The FDA may impose restrictions and conditions on product distribution, prescribing, or dispensing in the form of a risk management plan, or otherwise limit the scope of any approval. In addition, the FDA may require post marketing clinical trials, sometimes referred to as Phase 4 clinical trials, designed to further assess a biological product's safety and effectiveness, and testing and surveillance programs to monitor the safety of approved products that have been commercialized.

In addition, under the Pediatric Research Equity Act, a BLA or supplement to a BLA must contain data to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers.

Post-Approval Requirements

Any products for which we receive FDA approvals are subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the product, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, and complying with FDA promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting products for uses or in patient populations that are not described in the product's approved uses, known as 'off-label' use, limitations on industry-sponsored scientific and educational activities, and requirements for promotional activities involving the internet. Although physicians may prescribe legally available products for off-label uses, if the physicians deem to be appropriate in their professional medical judgment, manufacturers may not market or promote such off-label uses.

In addition, quality control and manufacturing procedures must continue to conform to applicable manufacturing requirements after approval to ensure the long-term stability of the product. cGMP regulations require among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer, or holder of an approved BLA, including, among other things, recall or withdrawal of the product from the market. In addition, changes to the manufacturing process are strictly regulated, and depending on the significance of the change, may require prior FDA approval before being implemented. Other types of changes to the approved product, such as adding new indications and claims, are also subject to further FDA review and approval.

The FDA also may require post-marketing testing, known as Phase 4 testing, and surveillance to monitor the effects of an approved product. Discovery of previously unknown problems with a product or the failure to comply with applicable FDA requirements can have negative consequences, including adverse publicity, judicial or administrative enforcement, warning letters from the FDA, mandated corrective advertising or communications with doctors, and civil or criminal penalties, among others. Newly discovered or developed safety or effectiveness data may require changes to a product's approved labeling, including the addition of new warnings and contraindications, and also may require the implementation of other risk management measures. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our product candidates under development.

Other U.S. Healthcare Laws and Compliance Requirements

In the United States, our activities are potentially subject to regulation by various federal, state and local authorities in addition to the FDA, including but not limited to, the Centers for Medicare and Medicaid Services, or CMS, other divisions of the U.S. Department of Health and Human Services, for instance the Office of Inspector General, the U.S. Department of Justice, or DOJ, and individual U.S. Attorney offices within the DOJ, and state and local governments. For example, sales, marketing and scientific/educational grant programs must comply with the anti-fraud and abuse provisions of the Social Security Act, the false claims laws, the physician payment transparency laws, the privacy and security provisions of HIPAA, as amended by HITECH, and similar state laws, each as amended.

The federal anti-kickback statute prohibits, among other things, any person or entity, from knowingly and willfully offering, paying, soliciting or receiving any remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. The term remuneration has been interpreted broadly to include anything of value. The anti-kickback statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers, and formulary managers on the other. There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution. The exceptions and safe harbors are drawn narrowly and practices that involve remuneration that may be alleged to be intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exception or safe harbor. Our practices may not in all cases meet all of the criteria for protection under a statutory exception or regulatory safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor, however, does not make the conduct per se illegal under the anti-kickback statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all of its facts and circumstances. Violations of this law are punishable by imprisonment, criminal fines, administrative civil money penalties and exclusion from participation in federal healthcare programs.

Additionally, the intent standard under the anti-kickback statute was amended by the Affordable Care Act ("ACA") to a stricter standard such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the Patient Protection and ACA, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively the ACA, provides that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal civil False Claims Act ("FCA"), as discussed below.

The civil monetary penalties statute imposes penalties against any person or entity that, among other things, is determined to have presented or caused to be presented a claim to a federal health program that the person knows or should know is for an item or service that was not provided as claimed or is false or fraudulent.

Although we would not submit claims directly to payors, drug manufacturers can be held liable under the federal civil FCA, which imposes civil penalties, including through civil whistleblower or qui tam actions, against individuals or entities (including manufacturers) for, among other things, knowingly presenting, or causing to be presented to federal programs (including Medicare and Medicaid) claims for items or services, including drugs, that are false or fraudulent, claims for items or services not provided as claimed, or claims for medically unnecessary items or services; making a false statement or record material to payment of a false claim; or avoiding, decreasing or concealing an obligation to pay money to the federal government. Penalties for a FCA violation include three times the actual damages sustained by the government, plus mandatory civil penalties for each separate false claim, the potential for exclusion from participation in federal healthcare programs and, although the federal FCA is a civil statute, conduct that results in a FCA violation may also implicate various federal criminal statutes. The government may deem manufacturers to have "caused" the submission of false or fraudulent claims by, for example, providing inaccurate billing or coding information to customers or promoting a product off-label. Claims which include items or services resulting from a violation of the federal Anti-Kickback Statute are false or fraudulent claims for purposes of the FCA. Our future marketing and activities relating to the reporting of wholesaler or estimated retail prices for our products, if approved, the reporting of prices used to calculate Medicaid rebate information and other information affecting federal, state and third-party reimbursement for our products, and the sale and marketing of our product and any future product candidates, are subject to scrutiny under this law. Pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. Other companies have been prosecuted for causing false claims to be submitted because of the companies' marketing of the product for unapproved, and thus non-reimbursable, uses.

HIPAA created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud or to obtain, by means of false or fraudulent pretenses, representations or promises, any money or property owned by, or under the control or custody of, any healthcare benefit program, including private third party payors and knowingly and willfully falsifying, concealing or covering up by trick, scheme or device, a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the federal anti-kickback statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation.

We may be subject to data privacy and security regulations by both the federal government and the states in which we conduct business. HIPAA, as amended by the HITECH Act, and their respective implementing regulations, impose requirements relating to the privacy, security and transmission of individually identifiable health information. Among other things, HITECH makes HIPAA's privacy and security standards directly applicable to business associates, defined as independent contractors or agents of covered entities, which include health care providers, health plans, and healthcare clearinghouse, that create, receive, or obtain protected health information in connection with providing a service on behalf of a covered entity. HITECH also increased the civil and criminal penalties that may be imposed against covered entities and business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorney's fees and costs associated with pursuing federal civil actions. In addition, certain state laws govern the privacy and security of health information in specified circumstances, some of which are more stringent and many of which differ from each other in significant ways, thus complicating compliance efforts. Failure to comply with these laws, where applicable, can result in the imposition of significant civil and criminal penalties.

Additionally, the Federal Physician Payments Sunshine Act under the ACA, and its implementing regulations, require that certain manufacturers of drugs, devices, biological and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, (with certain exceptions), to annually report to the Centers for Medicare and Medicaid, or CMS, information related to certain payments or other transfers of value made or distributed to physicians and teaching hospitals, or to entities or individuals at the request of, or designated on behalf of, the physicians and teaching hospitals and to report annually certain ownership and investment interests held by physicians and their immediate family members. Failure to submit timely, accurately, and completely the required information may result in civil monetary penalties. Certain states also mandate implementation of compliance programs, impose restrictions on pharmaceutical manufacturer marketing practices and/or require the tracking and reporting of gifts, compensation and other remuneration to healthcare providers and entities.

In order to distribute products commercially, we must also comply with state laws that require the registration of manufacturers and wholesale distributors of drug and biological products in a state, including, in certain states, manufacturers and distributors who ship products into the state even if such manufacturers or distributors have no place of business within the state. Some states also impose requirements on manufacturers and distributors to establish the pedigree of product in the chain of distribution, including some states that require manufacturers and others to adopt new technology capable of tracking and tracing product as it moves through the distribution chain. Several states have enacted legislation requiring pharmaceutical and biotechnology companies to establish marketing compliance programs, file periodic reports with the state, make periodic public disclosures on sales, marketing, pricing, clinical trials and other activities, and/or register their sales representatives, as well as to prohibit pharmacies and other healthcare entities from providing certain physician prescribing data to pharmaceutical and biotechnology companies for use in sales and marketing, and to prohibit certain other sales and marketing practices. All of our activities are potentially subject to federal and state consumer protection and unfair competition laws.

If our operations are found to be in violation of any of the federal and state healthcare laws described above or any other governmental regulations that apply to it, we may be subject to penalties, including without limitation, significant civil, criminal and/or administrative penalties, damages, fines, disgorgement, imprisonment, exclusion from participation in government programs, such as Medicare and Medicaid, injunctions, private "qui tam" actions brought by individual whistleblowers in the name of the government, or refusal to enter into government contracts, contractual damages, reputational harm, administrative burdens, diminished profits and future earnings, and the curtailment or restructuring of operations, any of which could adversely affect our ability to operate our business and our results of operations. If any of the physicians or other healthcare providers or entities with whom we expect to do business is found to be not in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs. Ensuring business arrangements comply with applicable healthcare laws, as well as responding to possible investigations by government authorities, can be time- and resource-consuming and can divert a company's attention from the business.

Coverage, Pricing and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any product candidates for which we obtain regulatory approval. In the United States and markets in other countries, sales of any products for which we receive regulatory approval for commercial sale will depend, in part, on the extent to that third-party payors provide coverage, and establish adequate reimbursement levels for such products. In the United States, third-party payors include federal and state healthcare programs, private managed care providers, health insurers and other organizations. The process for determining whether a third-party payor will provide coverage for a product may be separate from the process for setting the price of a product or for establishing the reimbursement rate that such a payor will pay for the product. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the FDA-approved products for a particular indication. Third-party payors are increasingly challenging the price, examining the medical necessity and reviewing the cost- effectiveness of medical products, therapies and services, in addition to questioning their safety and efficacy. We may need to conduct expensive pharmaco-economic studies in order to demonstrate the medical necessity and cost-effectiveness of our product candidates, in addition to the costs required to obtain the FDA approvals. Our product candidates may not be considered medically necessary or cost-effective. A payor's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage for the product. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on investment in product development.

Different pricing and reimbursement schemes exist in other countries. Some jurisdictions operate positive and negative list systems under which products may only be marketed once a reimbursement price has been agreed. To obtain reimbursement or pricing approval, some of these countries may require the completion of clinical trials that compare the cost-effectiveness of a particular product candidate to currently available therapies. Other countries allow companies to fix their own prices for medicines, but monitor and control company profits. The downward pressure on health care costs has become very intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross-border imports from low-priced markets exert a commercial pressure on pricing within a country.

The marketability of any product candidate for which we receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide adequate coverage and reimbursement. In addition, emphasis on managed care in the United States has increased and we expect the pressure on healthcare pricing will continue to increase. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

U.S. Healthcare Reform

In the United States and some foreign jurisdictions, there have been, and likely will continue to be, a number of legislative and regulatory changes and proposed changes regarding the healthcare system directed at broadening the availability of healthcare, improving the quality of healthcare, and containing or lowering the cost of healthcare.

Some of the provisions of the ACA have yet to be fully implemented, while certain provisions have been subject to judicial and Congressional challenges. It is unclear how these challenges and other efforts to repeal and replace the ACA will impact our business in the future.

Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. Additionally, there have been several recent U.S. Congressional inquiries and proposed bills designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs and reform government program reimbursement methodologies for drugs.

We cannot predict what healthcare reform initiatives may be adopted in the future. Further federal, state and foreign legislative and regulatory developments are likely, and we expect ongoing initiatives to increase pressure on drug pricing. Such reforms could have an adverse effect on anticipated revenues from product candidates and may affect our overall financial condition and ability to develop product candidates.

We anticipate that current and future U.S. legislative healthcare reforms may result in additional downward pressure on the price that we receive for any approved product, if covered, and could seriously harm our business. Any reduction in reimbursement from Medicare and other government programs may result in a similar reduction in payments from private payors.

Foreign Regulation

In order to market any product outside of the United States, we would need to comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of our products. Whether or not we obtain FDA approval for a product, it would need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in foreign countries and jurisdictions. Although many of the issues discussed above with respect to the United States apply similarly in the context of the European Union, the approval process varies between countries and jurisdictions and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries and jurisdictions might differ from and be longer than that required to obtain FDA approval. Regulatory approval in one country or jurisdiction does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country or jurisdiction may negatively impact the regulatory process in others.

European Data Collection

The collection and use of personal health data in the European Economic Area (EEA) is governed by the General Data Protection Regulation 2016/679 ("GDPR"), which became effective May 25, 2018. The GDPR applies to any company established in the EEA and to companies established outside the EEA that process personal data in connection with the offering of goods or services to data subjects in the EU or the monitoring of the behavior of data subjects in the EU. The GDPR enhances data protection obligations for data controllers of personal data (including stringent requirements relating to the consent of data subjects, expanded disclosures about how personal data is used, requirements to conduct privacy impact assessments for “high risk” processing, limitations on retention of personal data, mandatory data breach notification and “privacy by design” requirements) and creates direct obligations on service providers acting as data processors. The GDPR also imposes strict rules on the transfer of personal data outside of the EEA to countries that do not ensure an adequate level of protection, like the U.S. Failure to comply with the requirements of the GDPR and the related national data protection laws of the EEA Member States may result in fines up to 20 million Euros or 4% of a company’s global annual revenues for the preceding financial year, whichever is higher. Moreover, the GDPR grants data subjects the right to claim material and non-material damages resulting from infringement of the GDPR. Given the breadth and depth of changes in data protection obligations, maintaining compliance with the GDPR, will require significant time, resources and expense, and we may be required to put in place additional mechanisms ensuring compliance with the new data protection rules. This may be onerous and adversely affect our business, financial condition, results of operations and prospects**.**

Human Capital

We believe that our success depends upon our ability to attract, develop and retain key personnel. Our management and scientific teams possess considerable experience in drug discovery, research, manufacturing, clinical development and regulatory matters and we believe that we benefit from this experience and industry knowledge. Our research team includes M.D., M.S., and Ph.D.-level scientists with expertise in cancer biology. As of December 31, 2021, we had 23 full-time employees, of which 15 were part of our research team and 8 were part of our general and administrative team. Of the management team, 80% are women or minorities. We have no collective bargaining agreements with our employees and have not experienced any work stoppages. We consider our relations with our employees to be good. Although, management continually seeks to add additional talent to its work force, management believes that it has sufficient human capital to operate its business successfully.

Competitive Pay and Benefits

Our compensation programs are designed to align the compensation of our employees with our performance and to provide the proper incentives to attract, retain and motivate employees to achieve superior results. The structure of our compensation programs balances incentive earnings for both short-term and long-term performance. Specifically:

- We provide employee wages that are competitive and consistent with employee positions, skill levels, experience, knowledge and geographic location.

- We engage nationally recognized outside compensation and benefits consulting firms to independently evaluate the effectiveness of our executive compensation and benefit programs and to provide benchmarking against our peers within the industry.

- We align our executives' long-term equity compensation with our shareholders' interests by linking realizable pay with stock performance.
- Annual increases and incentive compensation are based on merit, which is communicated to employees at the time of hiring and documented through our talent management process as part of our annual review procedures and upon internal transfer and/or promotion.
- All employees are eligible for health insurance, paid and unpaid leaves, a 401K retirement plan with employer matching contributions (maximum of 2% match) and life and disability/accident coverage. We also offer a variety of voluntary benefits that allow employees to select the options that meet their needs, including flexible time-off, telemedicine, and paid parental leave.

Health and Safety

The health and safety of our employees is our highest priority, and this is consistent with our operating philosophy. Accordingly, with the global spread of the ongoing novel COVID-19 pandemic, we have implemented plans designed to address and mitigate the impact of the COVID-19 pandemic on the safety of our employees and our business, which include:

- Adding work from home flexibility;
- Adjusting attendance policies to encourage those who are sick to stay home;
- Increasing cleaning protocols across all locations;
- Initiating regular communication regarding impacts of the COVID-19 pandemic, including health and safety protocols and procedures;

Core Values and Culture

Fostering and maintaining a strong, healthy culture is a key strategic focus. Our core values reflect who we are and the way our employees interact with one another, our customers, partners and shareholders. Our core values include: treating one another with respect, considering the needs of others and providing solutions to meet their needs, being constantly working to improve and willing to try new approaches, making decisions with the long-term view in mind, and acting as a team by listening to one another and working across teams toward a common goal. We collaborate to achieve results and focus on success for our patients and shareholders.

Corporate Information

We were incorporated under the laws of the State of Delaware in December 2008 under the name Versartis, Inc. and completed our initial public offering in March 2014. Aravive Biologics was incorporated under the laws of the State of Delaware in April 2007, originally under the name of Hypoximed, Inc, which name was changed to Ruga Corporation in July 2009 and changed to Aravive Biologics, Inc. in October 2016. On October 12, 2018, we, then known as Versartis, Inc. and Aravive Biologics, completed a merger and reorganization (the "Merger"), pursuant to which Aravive Biologics survived as our wholly owned subsidiary. In connection with the completion of the Merger, on October 15, 2018, we changed our name from Versartis, Inc. to "Aravive, Inc." and on October 16, 2018, we effected a reverse split of our common stock at a ratio of 1-for-6 (the "Reverse Split").

Available Information

Our website address is www.aravive.com. We file Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statements and other materials with the Securities and Exchange Commission (the "SEC"). We are subject to the informational requirements of the Exchange Act and file or furnish reports, proxy statements and other information with the SEC. Such reports and other information filed by the Company with the SEC are available free of charge on our website at http://ir.aravive.com/investors/financial-information. Information contained on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K, and you should not consider information on our website to be part of this Annual Report on Form 10-K

The SEC also maintains a website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at www.sec.gov.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. You should consider carefully the following risks, together with all the other information in this Annual Report on Form 10-K, including the section titled "Cautionary Note Regarding Forward-Looking Statements," and Part II, Item 7."Management's Discussion and Analysis of Financial Condition and Results of Operation" and our consolidated financial statements and the accompanying notes included elsewhere in this Annual Report on Form 10-K. The risks described below are not the only ones we face. Any of the following risks could materially and adversely affect our business. If any of the following risks actually materializes, our operating results, financial condition and liquidity could be materially adversely affected. As a result, the trading price of our common stock could decline and you could lose part or all of your investment. Our business, financial condition and results of operations could also be harmed by risks and uncertainties not currently known to us or that we currently do not believe are material.

Risks related to our financial position and capital requirements.

We have a limited operating history and have incurred significant losses since our inception, and we anticipate that we will continue to incur substantial and increasing losses for the foreseeable future. We have only one product candidate, batiraxcept, and no commercial sales, which, together with our limited operating history, makes it difficult to evaluate our business and assess our future viability.

We are a clinical-stage biopharmaceutical company with a limited operating history. We have never generated any product revenue and do not have any products approved for sale. From our inception (under our former corporate name, Versartis, Inc.) in 2008 through September 2017, we were focused on developing a single product candidate, somavaratan, a long-acting form of recombinant human growth hormone. The Phase 3 clinical trial of somavaratan failed to meet its primary endpoint, and we subsequently discontinued our somavaratan development effort. In October 2018, we acquired Aravive Biologics in the Merger whereby Aravive Biologics became our wholly owned subsidiary. All of our clinical development activities are now carried out through Aravive Biologics.

Aravive Biologics was founded in 2007, and its operations to date have been primarily focused on developing its only product candidate, batiraxcept. Aravive Biologics has not yet successfully obtained marketing approval, manufactured batiraxcept product at commercial scale, or conducted sales and marketing activities that will be necessary to successfully commercialize batiraxcept. Consequently, predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history or a history of successfully developing and commercializing product candidates.

Even if we receive regulatory approval for the sale of any of our product candidates, we do not know when we will begin to generate revenue, if at all. Our ability to generate revenue depends on a number of factors, including our ability to:

- set an acceptable price for our products and obtain coverage and adequate reimbursement from third-party payors;
- establish sales, marketing, manufacturing and distribution systems;
- add operational, financial and management information systems and personnel, including personnel to support our clinical, manufacturing and planned future clinical development and commercialization efforts and operations as a public company;
- develop manufacturing capabilities for bulk materials and manufacture commercial quantities of product candidates at acceptable cost levels;
- achieve broad market acceptance of our product candidates in the medical community and with third-party payors and consumers;
- attract and retain an experienced management and advisory team;
- launch commercial sales of our products, whether alone or in collaboration with others; and
- maintain, expand and protect our intellectual property portfolio.

Because of the numerous risks and uncertainties associated with development and manufacturing, we are unable to predict if we will generate revenue. If we cannot successfully execute on any of the factors listed above, our business may not succeed, we may never generate revenue and your investment will be adversely affected.

We have incurred significant losses since inception and expect to continue to incur significant losses for the foreseeable future and may never achieve or maintain profitability.

We have incurred significant operating losses in each year since our inception and expect to incur substantial and increasing losses for the foreseeable future. As of December 31, 2021, we had an accumulated deficit of approximately $539.8 million.

To date, we have financed our operations primarily through private placements of our equity securities, debt financing, CPRIT grant proceeds, at-the-market offerings of our common stock, public offerings of our common stock as well as upfront and milestone payments received from license agreements. We have devoted substantially all of our efforts to research and development, including clinical studies, but have not completed development of any product candidate. We anticipate that our expenses will increase to the extent we:

- continue the research and development of our only product candidate, batiraxcept, and any future product candidates;
- conduct additional clinical studies of batiraxcept in the future, especially later stage trials that involve a larger number of patients;
- seek to discover or in-license additional product candidates;
- seek regulatory approvals for batiraxcept and any future product candidates that successfully complete clinical studies;
- establish a sales, marketing and distribution infrastructure and scale-up manufacturing capabilities to commercialize batiraxcept or other future product candidates if they obtain regulatory approval, including process improvements in order to manufacture batiraxcept at commercial scale; and
- enhance operational, financial and information management systems and hire more personnel, including personnel to support development of batiraxcept and any future product candidates and, if a product candidate is approved, our commercialization efforts.

To be profitable in the future, we must succeed in developing and eventually commercializing batiraxcept as well as other products with significant market potential. This will require us to be successful in a range of activities, including advancing batiraxcept and any future product candidates, completing clinical studies of these product candidates, obtaining regulatory approval for these product candidates and manufacturing, marketing and selling those products for which we may obtain regulatory approval. We may not succeed in these activities and may never generate revenue that is sufficient to be profitable in the future. Even if we are profitable, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to achieve sustained profitability would depress the value of our company and could impair our ability to raise capital, expand our business, diversify our product candidates, market our product candidates, if approved, or continue our operations.

We expect our research and development expenses to increase significantly as our product candidates advance in clinical development. Because of numerous risks and uncertainties involved in our business, the timing or amount of increased development expenses cannot be accurately predicted and, our expenses could increase beyond expectations if we are required by the FDA, or comparable non-U.S. regulatory authorities, to perform studies or clinical trials in addition to those we currently anticipate. Even if our product candidate, batiraxcept, is approved for commercial sale, we anticipate incurring significant costs associated with the commercial launch of and the related commercial-scale manufacturing requirements for batiraxcept. As a result, we expect to continue to incur significant and increasing operating losses and negative cash flows for the foreseeable future. Because of the numerous risks and uncertainties associated with biopharmaceutical product development and commercialization, we are unable to accurately predict the timing or amount of future expenses or when, or if, we will be able to achieve or maintain profitability. These losses have had and will continue to have an adverse effect on our financial position and working capital.

There is uncertainty regarding our ability to maintain liquidity sufficient to operate our business effectively, which raises substantial doubt about our ability to continue as a going concern.

Our consolidated audited financial statements as of and for the year ended December 31, 2021 have been prepared under the assumption that we will continue as a going concern for the next twelve months. Our management concluded that our recurring losses from operations and the fact that we have not generated significant revenue or positive cash flows from operations raise substantial doubt about our ability to continue as a going concern for the next twelve months after issuance of our financial statements. Our auditors also included an explanatory paragraph in its report on our financial statements as of and for the year ended December 31, 2021 with respect to this uncertainty. Our ability to continue as a going concern is dependent upon our ability to obtain additional equity or debt financing, attain further operating efficiencies, reduce expenditures, and, ultimately, to generate revenue. Since inception, we have incurred net losses and negative cash flows from operations. At December 31, 2021, we had an accumulated deficit of $539.8 million and working capital of $44.8 million. Subsequent to December 31, 2021, we received approximately $19.3 million in net proceeds from financings. We expect to continue to incur losses from expenses related to the development of batiraxcept and related administrative activities for the foreseeable future. As of December 31, 2021, we had a cash and cash equivalents balance of approximately $59.4 million consisting of cash and investments in highly liquid U.S. money market funds. We believe that our current cash and cash equivalents will be sufficient to fund our current planned operations into the first quarter of 2023 but that we will need to seek additional capital to fulfill our operating and capital requirement for the next 12 months to advance our clinical development program to later stages of development and commercialize our clinical product candidate. Although management has been successful in raising capital in the past, there can be no assurance that we will be successful or that any needed financing will be available in the future at terms acceptable to the Company. As such, the Company cannot conclude that such plans will be effectively implemented within one year after the date that the financial statements included in this Annual Report on Form 10-K are filed with the SEC and there is uncertainty regarding our ability to maintain liquidity sufficient to operate our business effectively, which raises substantial doubt about our ability to continue as a going concern.

We will need additional funds to support our operations, and such funding may not be available to us on acceptable terms, or at all, which would force us to delay, reduce or suspend our research and development programs and other operations or commercialization efforts. Raising additional capital may subject us to unfavorable terms, cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our product candidates and technologies.

The completion of the development and the potential commercialization of batiraxcept and any future product candidates, should they receive approval, will require substantial funds. As of December 31, 2021, we had approximately $59.4 million in cash and cash equivalents, which does not include additional funds raised subsequent to December 31, 2021. We believe that our existing cash and cash equivalents, which includes cash received in financings subsequent to December 31, 2021, will be sufficient to fund our current planned operations into the first quarter of 2023 based on our existing business plan; however, our existing cash and cash equivalents will not be sufficient to enable us to complete the clinical development and commercialization of batiraxcept. Our future financing requirements will depend on many factors, some of which are beyond our control, including the following:

- the rate of progress and cost of our future clinical studies;

- the number of patients in our clinical trials;
- the timing of, and costs involved in, seeking and obtaining approvals from the FDA and other regulatory authorities;
- the cost of preparing to manufacture batiraxcept on a larger scale, should we elect to do so;
- the costs of commercialization activities if batiraxcept or any future product candidate is approved, including product sales, marketing, manufacturing and distribution;
- the degree and rate of market acceptance of any products launched by us or future partners;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;

- our ability to enter into additional collaboration, licensing, commercialization or other arrangements and the terms and timing of such arrangements;
- the emergence of competing technologies or other adverse market developments; and
- the costs of attracting, hiring and retaining qualified personnel.

We do not have any material committed external source of funds or other support for our development efforts. Although we have entered into an at-the-market facility with Piper Sandler & Co. ("Piper Sandler"), and Cantor Fitzgerald & Co. ("Cantor Fitzgerald"), as sales agents, there can be no assurance that we will meet all of the conditions necessary to continue to use such facility or that we can generate sufficient proceeds from the sale of securities pursuant to such facility to support our operations. Until we can generate a sufficient amount of product revenue to finance our cash requirements, which we may never do, we expect to finance future cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. Additional financing may not be available to us when we need it or it may not be available on favorable terms. In addition, certain SEC and Nasdaq Stock Market Global health limitations with respect to fundraising, including limitations on the use of our shelf registration statement, may make it more difficult to raise additional funds. If we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of, or suspend one or more of our clinical studies or research and development programs or our commercialization efforts.

Raising additional funds by issuing securities may cause dilution to existing stockholders, and raising funds through lending and licensing arrangements may restrict our operations or require it to relinquish proprietary rights.

We expect that significant additional capital will be needed in the future to continue our planned operations and commercialize batiraxcept. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, strategic alliances and license and development agreements in connection with any collaborations. We do not currently have any committed external source of funds. To the extent that we raise additional capital by issuing equity securities, existing stockholders' ownership may experience substantial dilution, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of a common stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, declaring dividends, creating liens, redeeming its stock or making investments.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, or through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties on acceptable terms, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise develop and market.

Our operating results may fluctuate significantly, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or our guidance.

Our quarterly and annual operating results may fluctuate significantly in the future, which makes it difficult for us to predict our future operating results. From time to time, we may enter into collaboration agreements with other companies that include development funding and significant upfront and milestone payments and/or royalties, which may become an important source of our revenue. Accordingly, our revenue may depend on development funding and the achievement of development and clinical milestones under any potential future collaboration and license agreements and sales of our products, if approved. These upfront and milestone payments may vary significantly from period to period and any such variance could cause a significant fluctuation in our operating results from one period to the next. In addition, our manufacturing and clinical trial expenses, which are anticipated to be significant, may fluctuate significantly quarter to quarter based upon whether or not we are engaged in clinical trials or manufacturing our product candidate, batiraxcept, and timing of our process development work. Furthermore, we measure compensation cost for stock-based awards made to employees at the grant date of the award, based on the fair value of the award as determined by our board of directors, and recognize the cost as an expense over the employee's requisite service period. As the variables that we use as a basis for valuing these awards change over time, our underlying stock price and stock price volatility, the magnitude of the expense that we must recognize may vary significantly. Furthermore, our operating results may fluctuate due to a variety of other factors, many of which are outside of our control and may be difficult to predict, including the following:

- the timing and cost of, and level of investment in, research and development activities relating to batiraxcept and any future product candidates, which will change from time to time;
- our ability to enroll patients in clinical trials and the timing of enrollment;
- the cost of manufacturing batiraxcept and any future product candidates, which may vary depending on FDA guidelines and requirements, the quantity of production and the terms of our agreements with manufacturers;
- expenditures that we will or may incur to acquire or develop additional product candidates and technologies;

- the timing and outcomes of clinical studies for batiraxcept and any future product candidates or competing product candidates;
- changes in the competitive landscape of our industry, including consolidation among our competitors or partners;
- any delays in regulatory review or approval of batiraxcept or any of our future product candidates;
- the level of demand for batiraxcept and any future product candidates, should they receive approval, which may fluctuate significantly and be difficult to predict;
- the risk/benefit profile, cost and reimbursement policies with respect to our products candidates, if approved, and existing and potential future drugs that compete with our product candidates;
- competition from existing and potential future drugs that compete with batiraxcept or any of our future product candidates;
- our ability to commercialize batiraxcept or any future product candidate inside and outside of the United States, either independently or working with third parties;
- our ability to establish and maintain collaborations, licensing or other arrangements;
- our ability to adequately support future growth;
- potential unforeseen business disruptions that increase our costs or expenses;
- future accounting pronouncements or changes in our accounting policies; and
- the changing and volatile global economic environment.

The cumulative effects of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance. This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our revenue or operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue and/or earnings guidance we may provide.

Risks Related To Our Business

Global health crises may adversely affect our planned operations.

Our business and the business of the supplier of our clinical product candidate, batiraxcept and the suppliers of the standard of care drugs that are administered in combination with batiraxcept could be materially and adversely affected by the risks, or the public perception of the risks, related to a pandemic or other health crisis, such as the recent outbreak of COVID-19. We have experienced delays in patient enrollment due to the COVID-19 pandemic. To date, we are on track to meet all of our previously announced clinical milestones other than the delay in the interim analysis discussed above; however, if the COVID-19 pandemic continues and persists for an extended period of time or increases in severity or we should experience another pandemic, we could once again experience delays in patient enrollment and experience significant disruptions to our clinical development timelines. If we experience delays in patient enrollment and deems it necessary or advisable to improve patient recruitment by, among other things, opening additional clinical sites, we could incur increased clinical program expenses. Any such disruptions or delays would, and any such increased clinical program expenses could, adversely affect our business, financial condition, results of operations and growth prospects.

In addition, a significant outbreak of contagious diseases in the human population could result in the complete or partial closure of one or more manufacturing facilities which could impact our supply of batiraxcept or the standard of care drugs that are administered in combination with batiraxcept. In addition, an outbreak near where our clinical trial sites are located, has in the past, and may in the future impact our ability to recruit patients, and would likely delay our clinical trials, and could affect our ability to complete our clinical trials within the planned time periods. In addition, it could impact economies and financial markets, resulting in an economic downturn that could impact our ability to raise capital or slow down potential partnering relationships.

COVID-19 could adversely impact our business, including our clinical trials.

In December 2019, a novel strain of COVID-19, was reported to have surfaced in Wuhan, China. Since then, COVID-19 has spread to multiple countries, including the United States and European and Asia-Pacific countries, including countries in which we have planned or active clinical trial sites. As COVID-19 continues to spread around the globe, we have experienced disruptions that could severely impact our business and clinical trials, including:

- delays or difficulties in enrolling patients in our clinical trials;
- delays or difficulties in clinical site initiation, including difficulties in recruiting clinical site investigators and clinical site staff;
- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of our clinical trials;
- interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel imposed or recommended by federal or state governments, employers and others;
- limitations in employee resources that would otherwise be focused on the conduct of our clinical trials, including because of sickness of employees or their families or the desire of employees to avoid contact with large groups of people;
- delays in receiving approval from local regulatory authorities to initiate our planned clinical trials;
- delays in clinical sites receiving the supplies and materials needed to conduct our clinical trials;
- interruption in global shipping that may affect the transport of clinical trial materials, such as investigational drug product used in our clinical trials;
- changes in local regulations as part of a response to the COVID-19 outbreak which may require us to change the ways in which our clinical trials are conducted, which may result in unexpected costs, or to discontinue the clinical trials altogether;
- delays in necessary interactions with local regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees; and
- delays in the timing of interactions with the FDA due to absenteeism by federal employees or by the diversion of their efforts and attention to approval of other therapeutics or other activities related to COVID-19.

In addition, the outbreak of COVID-19 could disrupt our operations due to absenteeism by infected or ill members of management or other employees, or absenteeism by members of management and other employees who elect not to come to work due to the illness affecting others in our office or laboratory facilities, or due to quarantines. COVID-19 illness could also impact members of our Board of Directors resulting in absenteeism from meetings of the directors or committees of directors, and making it more difficult to convene the quorums of the full Board of Directors or its committees needed to conduct meetings for the management of our affairs.

The global outbreak of COVID-19 continues to rapidly evolve. The extent to which COVID-19 may impact our business and clinical trials will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the ultimate geographic spread of the disease, the duration of the outbreak, travel restrictions and social distancing in the United States and other countries, business closures or business disruptions and the effectiveness of actions taken in the United States and other countries to contain and treat the disease.

Business disruptions could seriously harm our future revenue and financial condition and increase costs and expenses.

Our operations and those of our third-party suppliers and collaborators could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes or other extreme weather conditions, medical epidemics, labor disputes, war or other business interruptions. Any interruption could seriously harm our ability to timely proceed with any clinical programs or to supply product candidates for use in our clinical programs or during commercialization. For example, the current COVID-19 pandemic has, at points, caused an interruption in our clinical trial activities. Additionally, supply chains disruptions impact and may continue to impact our research activities. Moreover, at the end of 2021 and into 2022, tensions between the United States and Russia escalated when Russia amassed large numbers of military ground forces and support personnel on the Ukraine-Russia border and, in February 2022, Russia invaded Ukraine. In response, North Atlantic Treaty Organization, or NATO has deployed additional military forces to Eastern Europe, and the Biden administration announced certain sanctions against Russia. The invasion of Ukraine and the retaliatory measures that have been taken, or could be taken in the future, by the United States, NATO, and other countries have created global security concerns that could result in a regional conflict and otherwise have a lasting impact on regional and global economies, any or all of which could disrupt our supply chain and adversely affect our ability to conduct ongoing and future clinical trials of our product candidates. For example, currently we have plans to conduct clinical trials in Eastern European countries, and may be prevented from doing so. This could negatively impact the anticipated timing and completion of our clinical trials and/or analyses of clinical results. In addition, if any sanctions were to be imposed on China that effect the export of our clinical trial materials, our ability to complete current and future clinical trials could be adversely impacted.

Reliance on government funding for our programs may impose requirements that limit our ability to take certain actions, and subject us to potential financial penalties, which could materially and adversely affect our business, financial condition and results of operations.

A significant portion of our funding has been through a grant Aravive Biologics received from CPRIT. The CPRIT Grant (as described below) includes provisions that reflect the government's substantial rights and remedies, many of which are not typically found in commercial contracts, including powers of the government to potentially require repayment of all or a portion of the grant award proceeds, in certain cases with interest, in the event we violate certain covenants pertaining to various matters that include any potential relocation outside of the State of Texas. Although our contract with CPRIT terminated November 30, 2019, our royalty and other obligations, including our obligation to repay the disbursed grant proceeds under certain circumstances, to maintain certain records and documentation, to notify CPRIT of certain unexpected adverse events and our obligation to use reasonable efforts to ensure that any new or expanded preclinical testing, clinical trials, commercialization or manufacturing related to any aspect to our CPRIT

project take place in Texas, survive the termination of the agreement. In addition, if we relocate our principal place of business outside of Texas within the three-year period after the date of final payment of grant funds (which final payment occurred in March 2020), we are required to repay to CPRIT all grant funds received. We have received the full $20.0 million of the grant proceeds and have expended all of the grant award proceeds by the agreement termination date.

Our award from CPRIT requires us to pay CPRIT a portion of our revenues from sales of certain products by us, or received from our licensees or sublicensees, at tiered percentages of revenue in the low- to mid-single digits until the aggregate amount of such payments equals 400% of the grant award proceeds, and thereafter at a rate of less than one percent for as long as we maintain government exclusivity, subject to our right, under certain circumstances, to make a one-time payment in a specified amount to CPRIT to terminate such payment obligations. In addition, the grant contract also contains a provision that provides for repayment to CPRIT of some amount not to exceed the full amount of the grant proceeds under certain specified circumstances involving relocation of our principal place of business outside Texas.

In order to meet the requirements that any new or expanded preclinical testing, clinical trials, commercialization or manufacturing related to any aspect of our CPRIT project take place in Texas, we will need to hire additional qualified personnel and vendors with expertise in preclinical testing, clinical research and testing, government regulation, formulation and manufacturing, sales and marketing and accounting and financing located in Texas. We will compete for qualified individuals, vendors, clinical trial sites, manufacturers with numerous biopharmaceutical companies, universities and other research institutions. Competition for such individuals is intense, and there can be no assurance that the search for such personnel will be successful, especially in light of the territorial restrictions imposed by CPRIT.

If we fail to maintain compliance with any such requirements that may apply to us now or in the future, we may be subject to potential liability and to termination of our contracts, including potentially the CPRIT Grant, which could result in significant expense to us.

We rely on licenses to use various technologies that are material to our business and if the agreements underlying the licenses were to be terminated or if other rights that may be necessary for commercializing our intended products cannot be obtained, it would halt our ability to market our products and technology, as well as have an immediate material adverse effect on our business, operating results and financial condition.

Our prospects are significantly dependent upon our license with Stanford University (the "Stanford License"). The Stanford License grants us exclusive, worldwide rights to certain existing patents and related intellectual property that cover batiraxcept, the lead development candidate selected from the AVB-S6 family of proteins. If we breach the terms of the Stanford License, including any failure to make minimum royalty payments required thereunder or failure to reach certain developmental milestones and by certain deadlines or other factors, including but not limited to, the failure to comply with material terms of the Stanford License, the licensor has the right to terminate the license. If we were to lose or otherwise be unable to maintain the license on acceptable terms, or find that it is necessary or appropriate to secure new licenses from other third parties, we would not be able to market our products and technology, which would likely require us to cease our current operations which would have an immediate material adverse effect on our business, operating results and financial condition.

If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.

In addition to the Stanford License, we are a party to intellectual property license agreements with third parties, and we expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that our future license agreements will impose, various diligence, milestone payment, royalty, insurance and other obligations on us. If we fail to comply with these obligations, our licensors may have the right to terminate these agreements, in which event we may not be able to develop and market any product that is covered by these agreements. The occurrence of such events could materially harm our business and financial condition.

The risks described elsewhere pertaining to our intellectual property rights also apply to the intellectual property rights that we license, and any failure by us or our licensors to obtain, maintain, defend and enforce these rights could have a material adverse effect on our business. In some cases, we do not have control over the prosecution, maintenance or enforcement of the patents that we license, and may not have sufficient ability to provide input into the patent prosecution, maintenance and defense process with respect to such patents, and our licensors may fail to take the steps that we believe are necessary or desirable in order to obtain, maintain, defend and enforce the licensed patents. We are responsible for preparing, filing, and prosecuting broad patent claims (including any interference or reexamination actions) for Stanford University’s benefit and for maintaining all licensed patents.

We expect to depend on collaborations with third parties for the development and commercialization of some of our products and product candidates outside of the United States. Our prospects with respect to those products and product candidates will depend in part on the success of those collaborations.

Although we are commercializing batiraxcept ourselves in the United States, we intend to seek to commercialize batiraxcept outside the United States through collaboration arrangements. For instance, we entered into the 3D Medicines Agreement under which we granted 3D Medicines an exclusive sublicense to develop and commercialize batiraxcept, in the Territory.

We may not be able to derive revenue from research and development fees, license fees, milestone payments and royalties under any collaborative arrangement into which we enter. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements, including obtaining regulatory approval in the sublicensed territory, which may not be obtainable even if we obtain regulatory approval to market products in the United States. In addition, our collaborators may have the right to abandon research or development projects and terminate applicable agreements, including funding obligations, prior to or upon the expiration of the agreed upon terms. As a result, we can expect to relinquish some or all of the control over the future success of a product or product candidate that we license to a third party.

Collaborations involving our products and product candidates, such as our license arrangement with 3D Medicines, may pose a number of risks, including the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected or in compliance with applicable regulatory requirements;
- collaborators may not pursue development and commercialization of our products and product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the collaborators' strategic focus or available funding, or external factors, such as an acquisition, that divert resources or create competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, use different doses that us, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- product candidates discovered in collaboration with us may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the commercialization of our product candidates;
- collaborators with marketing and distribution rights to one or more products may not commit sufficient resources to the marketing and distribution of such product or products;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of products and product candidates, might lead to additional responsibilities for us with respect to products and product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability; and
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates in the applicable territories.

Collaboration agreements may not lead to development or commercialization of products or product candidates in the most efficient manner or at all.

In addition, any negative results from clinical trials conducted by any third-party collaborator, including 3D Medicines, will negatively impact our commercialization efforts despite the fact that we will not have conducted those trials.

We rely extensively on our information technology systems which are vulnerable to damage and interruption.

We rely on our information technology systems and infrastructure to process transactions, summarize results and manage our business, including maintaining client and supplier information. Additionally, we utilize third parties, including cloud providers, to store, transfer and process data. Our information technology systems, as well as the systems of our suppliers and other partners, whose systems we do not control, are vulnerable to outages and an increasing risk of continually evolving deliberate intrusions to gain access to company sensitive information. Likewise, data security incidents and breaches by employees and others with or without permitted access to our systems pose a risk that sensitive data may be exposed to unauthorized persons or to the public. A cyber-attack or other significant disruption involving our information technology systems, or those of our vendors, suppliers and other partners, could also result in disruptions in critical systems, corruption or loss of data and theft of data, funds or intellectual property. We may be unable to prevent outages or security breaches in our systems. Loss of preclinical or clinical trial data could result in delays in regulatory approval efforts and increase costs to recover or reproduce data. We remain potentially vulnerable to additional known or yet unknown threats as, in some instances, we, our suppliers and our other partners may be unaware of an incident or its magnitude and effects. We also face the risk that we expose our vendors or partners to cybersecurity attacks. Any or all of the foregoing could adversely affect our results of operations and our business reputation.

Any failure to maintain the security of information relating to our customers, employees and suppliers, whether as a result of cybersecurity attacks or otherwise, could expose us to litigation, government enforcement actions and costly response measures, and could disrupt our operations and harm our reputation.

In connection with the sales and marketing of our products and services, we may from time to time transmit confidential information. We also have access to, collect or maintain private or confidential information regarding our clinical trials and the patients enrolled therein, employees, and suppliers, as well as our business. Cyberattacks are rapidly evolving and becoming increasingly sophisticated. It is possible that computer hackers and others might compromise our security measures, or security measures of those parties that we do business with now or in the future, and obtain the personal information of patients in our clinical trials, vendors, employees and suppliers or our business information. A security breach of any kind, including physical or electronic break-ins, computer viruses and attacks by hackers, employees or others, could expose us to risks of data loss, litigation, government enforcement actions, regulatory penalties and costly response measures, and could seriously disrupt our operations. Any resulting negative publicity could significantly harm our reputation, which could cause us to lose market share and have an adverse effect on our results of operations.

We may face particular data protection, data security and privacy risks in connection with privacy regulations.

In the United States we are subject to several laws that protect the privacy of protected health information as well as data breach notification laws, the violation of which can result in penalties, criminal and civil penalties. Outside of the United States, the laws, regulations and standards in many jurisdictions apply broadly to the collection, use, and other processing of personal information. For example, in the European Union, the collection and use of personal data are governed by the provisions of the General Data Protection Regulation (the "GDPR"). The GDPR, together with national legislation, regulations and guidelines of the European Union. member states governing the processing of personal data, impose strict obligations on entities, including but not limited to: (i) accountability and transparency requirements, and enhanced requirements for obtaining valid consent from data subjects; (ii) obligations to consider data protection as any new products or services are developed and to limit the amount of personal data processed; (iii) obligations to comply with the data protection rights of data subjects; and (iv) obligations to report certain personal data breaches to governmental authorities and individuals. Data protection authorities from the different E.U. member states and other European countries may enforce the GDPR and national data protection laws differently and introduce additional national regulations and guidelines, which adds to the complexity of processing European personal data. Failure to comply with the requirements of the GDPR and national data protection laws may result in significant monetary fines and other administrative penalties (the GDPR authorizes fines for certain violations of up to 4% of global annual revenue or €20 million, whichever is greater) as well as civil liability claims from individuals whose personal data was processed. Additionally, expenses associated with compliance could reduce our operating margins.

The GDPR also prohibits the transfer of personal data from the E.U. to countries outside of the E.U. unless made to a country deemed by the European Commission to provide adequate protection for personal data or accomplished by means of an approved data transfer mechanism (e.g., standard contractual clauses). Data protection authority guidance and enforcement actions that restrict companies' ability to transfer data may increase risks relating to data transfers or make it more difficult or impossible to transfer E.U. personal data to the U.S.

We currently have only one product candidate, batiraxcept, in clinical development and are dependent on the success of batiraxcept, which requires significant additional clinical testing before seeking regulatory approval. If batiraxcept does not receive regulatory approval or is not successfully commercialized, our business will be harmed.

We are currently developing one clinical product candidate, batiraxcept, as a potential treatment for several types of cancer and fibrosis. Batiraxcept is currently being tested in clinical trials, and, to date, we have not had any product candidate approved for commercial sale. It is possible that we may never be able to develop a marketable product candidate. Our main focus is the development of batiraxcept, for the treatment of platinum-resistant recurrent ovarian cancer, ccRCC and pancreatic cancer.

We expect that a substantial portion of our efforts and expenditures over the next few years will be devoted to batiraxcept. Accordingly, our business currently depends heavily on the successful development, regulatory approval and commercialization of batiraxcept, which may not receive regulatory approval or be successfully commercialized even if regulatory approval is received. The research, testing, manufacturing, labeling, approval, sale, marketing and distribution of product candidates are and will remain subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries that each have differing regulations. We are not permitted to market any product in the United States unless and until we receive approval of a BLA, from the FDA, or in any foreign countries unless and until we receive the requisite approval from regulatory authorities in such countries. We have never submitted a BLA to the FDA or comparable applications to other regulatory authorities and do not expect to be in a position to do so for the foreseeable future. Obtaining approval of a BLA is an extensive, lengthy, expensive and inherently uncertain process, and the FDA may delay, limit or deny approval of a product for many reasons.

Our success depends largely upon our ability to advance our clinical product candidate, batiraxcept, which is in early stages of development, through the various stages of drug development. If we are unable to successfully advance or develop batiraxcept, our business will be materially harmed.

Our clinical product candidate, batiraxcept, is in early stages of clinical development, and its commercial viability remains subject to the successful outcome of future preclinical studies, clinical trials, manufacturing processes, regulatory approvals and the risks generally inherent in the development of pharmaceutical product candidates. Failure to advance the development of batiraxcept may have a material adverse effect on our business. The long-term success of our business ultimately depends upon our ability to advance the development of batiraxcept through clinical trials, appropriately formulate and consistently manufacture it in accordance with strict specifications and regulations, obtain approval for sale by the FDA or similar regulatory authorities in other countries, and ultimately successfully commercialize it directly or with a strategic partner or licensee. We cannot assure investors that the results of our ongoing or future research, preclinical studies or clinical trials will support or justify the continued development of batiraxcept or that we will ultimately receive approval from the FDA, or similar regulatory authorities in other countries, to advance the development of batiraxcept.

Batiraxcept must satisfy rigorous regulatory standards of safety, efficacy and manufacturing before we can advance or complete its development and before it can be approved for sale by the FDA or similar regulatory authorities in other countries. To satisfy these standards, we must engage in expensive and lengthy studies and clinical trials, develop acceptable and cost-effective manufacturing processes, and obtain regulatory approval of batiraxcept. Despite these efforts, batiraxcept may not:

- demonstrate clinically meaningful therapeutic or other medical benefits as compared to a patient receiving no treatment or over existing drugs or other product candidates in development to treat the same patient population;

- be shown to be safe and effective in future preclinical studies or clinical trials;
- have the desired therapeutic or medical effects;
- be tolerable or free from undesirable or unexpected side effects;
- meet applicable regulatory standards;

- be capable of being appropriately formulated and manufactured in commercially suitable quantities or scale and at an acceptable cost; or
- be successfully commercialized by us or our licensees or collaborators.

Even if we demonstrate favorable results in preclinical studies and early-stage clinical trials, we cannot assure you that the results of late-stage clinical trials will be sufficient to support the continued development of batiraxcept. Many, if not most, companies in the pharmaceutical and biopharmaceutical industries have experienced significant delays, setbacks and failures in all stages of development, including late-stage clinical trials, even after achieving promising results in preclinical testing or early-stage clinical trials. Accordingly, results from completed preclinical studies and early-stage clinical trials of our batiraxcept may not be predictive of the results we may obtain in future late-stage trials, especially in light of the fact that the results from our clinical trials to date have been from a small number of patients and may not be replicated with a larger number of patients. Furthermore, even if the data collected from preclinical studies and clinical trials involving any of our clinical product candidates demonstrate a satisfactory safety, tolerability and efficacy profile, such results may not be sufficient to obtain regulatory approval from the FDA in the United States, or other similar regulatory agencies in other jurisdictions, which is required to market and sell the product.

Clinical trials are risky, lengthy and expensive. We incur substantial expense for, and devote significant time and resources to, preclinical testing and clinical trials, yet cannot be certain that these tests and trials will demonstrate that a product candidate is effective and well-tolerated, or will ever support its approval and commercial sale. For example, clinical trials require adequate supplies of clinical trial material and sufficient patient enrollment to power the trial. Delays in patient enrollment can result in increased costs and longer development times. Even if we, or a licensee or collaborator, if applicable, successfully complete clinical trials for batiraxcept, we or they might not file the required regulatory submissions in a timely manner and may not receive marketing approval for batiraxcept. We cannot assure you that batiraxcept will successfully progress further through the drug development process, or ultimately will result in an approved and commercially viable product.

We have limited experience conducting clinical trials.

We are an early-stage clinical stage company, and our success is dependent upon our ability to obtain regulatory approval for and commercialization of batiraxcept, and we have not demonstrated an ability to perform the functions necessary for the approval or successful commercialization of any product candidate. The successful commercialization of any product candidate may require us to perform a variety of functions, including:

- continuing to undertake preclinical development and successfully enroll subjects in clinical trials;
- participating in regulatory approval processes;
- formulating and manufacturing products; and
- conducting sales and marketing activities.

We have limited experience conducting and enrolling subjects in clinical trials. While certain members of our management and staff have significant experience in conducting clinical trials, to date, we have only limited experience conducting clinical trials. In part because of this lack of experience, we cannot guarantee that planned clinical trials will be completed on time, if at all, or that we will not require changes to our trial designs. Large-scale trials require significant additional financial and management resources, monitoring and oversight, and reliance on third-party clinical investigators, consultants or contract research organizations, or CROs. Relying on third-party clinical investigators, CROs and manufacturers, which are all also subject to governmental oversight and regulations, may also cause us to encounter delays that are outside of our control.

If the actual or perceived therapeutic benefits, or the safety or tolerability profile of our clinical product candidate, batiraxcept, is not equal to or superior to other competing treatments approved for sale or in clinical development, we may terminate the development of batiraxcept at any time, and our business prospects and potential profitability could be harmed.

We are aware of a number of companies marketing or developing product candidates for the treatment of patients with cancer and fibrosis that are either approved for sale or further advanced in clinical development than ours, such that their time to approval and commercialization may be shorter than that for batiraxcept.

There are currently FDA approved biological drugs that target the GAS6/AXL pathway. However, if ever approved as a treatment for cancer, batiraxcept would indirectly compete with drugs approved to treat various types of cancer, such as those that regulate T-cell proliferation, including nivolumab, pembrolizumab, atezolizumab and other small molecule chemically manufactured drugs that target this pathway or other classes of drugs that are used for the clinical indications that ours is currently pursuing in clinic.

If at any time we believe that batiraxcept may not provide meaningful or differentiated therapeutic benefits, perceived or real, equal to or better than its competitor's products or product candidates, or we believe that it may not have as favorable a safety or tolerability profile as potentially competitive compounds, we may delay or terminate its development. We cannot provide any assurance that the future development of batiraxcept will demonstrate any meaningful therapeutic benefits over potentially competitive compounds currently approved for sale or in development, or an acceptable safety or tolerability profile sufficient to justify its continued development.

For the Phase 3 clinical trial in patients with platinum-resistant recurrent ovarian cancer and for the Phase 1b/2 clinical trials in patients with ccRCC or pancreatic adenocarcinoma we are administering, or plan to administer, our clinical product candidate, batiraxcept, in combination with approved standard of care drugs. Any problems obtaining the standard of care drugs could result in a delay or interruption in our clinical trials.

For each of our ongoing clinical trials, we are administering batiraxcept in combination with already approved standard of care drugs. Therefore, our success will be dependent upon the continued use of and ability to obtain the standard of care drugs. We expect that in any other clinical trials we conduct for additional indications, our clinical product candidate will also be administered in combination with drugs owned by third parties. If any of the standard of care drugs that are used in our clinical trials are unavailable while the trials are continuing, the timeliness and commercialization costs could be impacted. In addition, if any of these other drugs are determined to have safety or efficacy problems, our clinical trials and commercialization efforts would be adversely affected.

If our product candidate, batiraxcept, requires or would commercially benefit from a companion diagnostic, and if we are unable to successfully validate, develop and obtain regulatory clearance or approval for such a companion diagnostic test, or experience significant delays in doing so, we may not realize the full commercial potential of our product candidates.

In connection with the clinical development of batiraxcept or other product candidates for certain indications, we may work with collaborators to develop or obtain access to in vitro companion diagnostic tests to identify patient subsets within a disease category who may derive selective and meaningful benefit from our drug candidates. Such companion diagnostics may be used during our clinical trials as well as in connection with the commercialization of our product candidates. To be successful, we or our collaborators will need to address a number of scientific, technical, regulatory and logistical challenges. The FDA and comparable foreign regulatory authorities regulate in vitro companion diagnostics as medical devices and, under that regulatory framework, will likely require the conduct of clinical trials to demonstrate the safety and effectiveness of any diagnostics we may develop, which we expect will require separate regulatory clearance or approval prior to commercialization. We may be unable to successfully validate, develop and obtain regulatory clearance or approval for any such companion diagnostic tests or may experience delays in doing so, which could materially harm or limit the commercial potential of our product candidates.

Our clinical product candidate, batiraxcept, may exhibit undesirable side effects when used alone or in combination with other approved pharmaceutical products, which may delay or preclude its development or regulatory approval, or limit its use if ever approved.

Throughout the drug development process, we must continually demonstrate the activity, safety and tolerability of batiraxcept, in order to obtain regulatory approval to further advance our clinical development, or to eventually market it. Even if our clinical product candidate demonstrates adequate biologic activity and clear clinical benefit, any unacceptable side effects or adverse events, when administered alone or in the presence of other pharmaceutical products, may outweigh these potential benefits. We may observe adverse or serious adverse events or drug-drug interactions in preclinical studies or clinical trials of batiraxcept, which could result in the delay or termination of its development, prevent regulatory approval, or limit its market acceptance if it is ultimately approved.

For our clinical product candidate, batiraxcept, we rely upon one third party to manufacture its drug substance. Any problems experienced by either our third-party manufacturer or our vendors could result in a delay or interruption in the supply of batiraxcept to us until the third-party manufacturer or its vendor cures the problem or until we locate and qualify an alternative source of manufacturing and supply.

For our clinical product candidate, batiraxcept, we currently rely on one third-party manufacturer located in China to manufacture batiraxcept for our clinical studies and that manufacturer purchases materials from our third-party vendors and transports the materials necessary to produce batiraxcept, such as the required reagents and containers. The recent outbreak of the novel strain of COVID-19 caused a widespread health crisis in several districts in China which resulted in temporary work stoppages in many affected districts. If the virus or any other virus should spread to the districts in which our manufacturer's facilities are located, we could experience delays in manufacturing and shipments of our clinical product, which could result in clinical trial delays. If the third-party manufacturer were to experience any prolonged disruption for our manufacturing, we could be forced to seek additional third-party manufacturing contracts, thereby increasing our development costs and negatively impacting our timelines and any commercialization costs. If we change manufacturers at any point during the development process or after approval of a product candidate, we will be required to demonstrate comparability between the product manufactured by the old manufacturer and the product manufactured by the new manufacturer. If we are unable to do so we may need to conduct additional clinical trials with product manufactured by the new manufacturer.

If our manufacturer is not able to manufacture sufficient quantities of batiraxcept, our development activities would be impaired. In addition, the manufacturing facility where our clinical product candidate, batiraxcept, is manufactured is subject to ongoing, periodic inspection by the FDA or other comparable regulatory agencies to ensure compliance with cGMP. Any failure to follow and document the manufacturer's adherence to such cGMP regulations or other regulatory requirements may lead to significant delays in the availability of clinical bulk drug substance and finished product for clinical trials, which may result in the termination of or a hold on a clinical trial, or may delay or prevent filing or approval of marketing applications for batiraxcept. We also may encounter problems with the following:

- achieving adequate or clinical-grade materials that meet FDA or other comparable regulatory agency standards or specifications with consistent and acceptable production yield and costs;
- Our contract manufacturers failing to develop an acceptable formulation to support late-stage clinical trials for, or the commercialization of, our clinical product candidate, batiraxcept;
- Our contract manufacturer being unable to increase the scale of or the capacity for, or reformulate the form of our clinical product candidate, batiraxcept, which may cause us to experience a shortage in supply, or cause the cost to manufacture batiraxcept to increase. We cannot assure you that our contract manufacturers will be able to manufacture batiraxcept at a suitable commercial scale, or that we will be able to find alternative manufacturers acceptable to us that can do so;
- Our contract manufacturer placing a priority on the manufacture of other customers' or its own products, rather than our products;
- Our contract manufacturer or our vendors failing to perform as agreed, including failing to properly package, transport or store batiraxcept or its reagents, or exiting from the contract manufacturing business;
- Our contract manufacturers' plants being closed as a result of regulatory sanctions or a natural disaster or pandemic;
- Shortages of qualified personnel, raw materials or key contractors;
- Our contract manufacturers failing to obtain FDA approval for commercial scale manufacturing; and
- Ongoing compliance with cGMP regulations and other requirements of the FDA or other comparable regulatory agencies.

If we encounter any of these problems or are otherwise delayed, or if the cost of manufacturing in the China facility is not economically feasible or we cannot find another third-party manufacturer, we may not be able to produce our clinical product candidate, batiraxcept, in a sufficient quantity to meet future demand.

In addition, since we rely on a third-party manufacturer located in China, our business is subject to risks associated with doing business in China, including:

- adverse political and economic conditions, particularly those potentially negatively affecting the trade relationship between the United States and China;
- trade protection measures, such as tariff increases, and import and export licensing and control requirements;
- potentially negative consequences from changes in tax laws;
- difficulties associated with the Chinese legal system, including increased costs and uncertainties associated with enforcing contractual obligations in China;
- historically lower protection of intellectual property rights;
- changes and volatility in currency exchange rates;
- unexpected or unfavorable changes in regulatory requirements;
- possible patient or physician preferences for more established pharmaceutical products and medical devices manufactured in the United States; and
- difficulties in managing foreign relationships and operations generally.

These risks are likely to be exacerbated by our limited experience with our current products and manufacturing processes. If demand for our products materializes, we may have to invest additional resources to purchase materials, hire and train employees, and enhance our manufacturing processes. It may not be possible for us to manufacture our clinical product candidate, batiraxcept, at a cost or in quantities sufficient to make its clinical product candidate commercially viable. Any of these factors may affect our ability to manufacture our products and could reduce gross margins and profitability.

Reliance on third-party manufacturers and suppliers entails risks to which we would not be subject if we manufactured batiraxcept, itself, including:

- reliance on the third parties for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreements by the third parties because of factors beyond our control or the insolvency of any of these third parties or other financial difficulties, labor unrest, natural disasters or other factors adversely affecting their ability to conduct their business; and
- possibility of termination or non-renewal of the agreements by the third parties, at a time that is costly or inconvenient for us, because of our breach of the manufacturing agreement or based on their own business priorities.

If our contract manufacturer or its suppliers fail to deliver the required commercial quantities of our clinical product candidate, batiraxcept, required for our clinical trials and, if approved, for commercial sale, on a timely basis and at commercially reasonable prices, and we are unable to find one or more replacement manufacturers or suppliers capable of production at a substantially equivalent cost, in substantially equivalent volumes and quality, and on a timely basis, we would likely be unable to meet demand for our products and would have to delay or terminate our pre-clinical or clinical trials, and we would lose potential revenue. It may also take a significant period of time to establish an alternative source of supply for batiraxcept and to have any such new source approved by the FDA or any applicable foreign regulatory authorities. Furthermore, any of the above factors could cause the delay or suspension of initiation or completion of clinical trials, regulatory submissions or required approvals of batiraxcept, cause it to incur higher costs and could prevent us from commercializing batiraxcept successfully.

We may not be able to manufacture batiraxcept in sufficient quantities for commercialization.

In order to receive FDA approval of our clinical product candidate, batiraxcept, we will need to manufacture such clinical product candidate in larger quantities. Our third-party manufacturer may not be willing or able to increase successfully the manufacturing capacity for batiraxcept in a timely or economic manner, or at all. In the event FDA approval is received, we will need to increase production of batiraxcept. Significant scale-up of manufacturing may require additional validation studies, which the FDA must review and approve. If we are unable to successfully increase the manufacturing capacity for batiraxcept, the clinical trials as well as the regulatory approval or commercial launch of batiraxcept may be delayed or there may be a shortage in supply. Batiraxcept requires precise, high quality manufacturing. Failure to achieve and maintain high quality manufacturing, including the incidence of manufacturing errors, could result in patient injury or death, delays or failures in testing or delivery, cost overruns or other problems that could harm our business, financial condition and results of operations.

In the event that we need to change our third-party contract manufacturer, our preclinical studies or our clinical trials, the commercialization of our clinical product candidate, batiraxcept, could be delayed, adversely affected or terminated, or such a change may result in the need for us to incur significantly higher costs, which could materially harm our business.

Due to various regulatory restrictions in the United States and many other countries, as well as potential capacity constraints on manufacturing that occur from time-to-time in our industry, various materials in the manufacturing of batiraxcept are solely-sourced from certain contract manufacturers. In accordance with cGMPs, changing manufacturers may require the re-validation of manufacturing processes and procedures, and may require further preclinical studies or clinical trials to show comparability between the materials produced by different manufacturers. Changing our current or future contract manufacturers may be difficult, if not impossible for us, and could be extremely costly if we do make such a change, which could result in our inability to manufacture batiraxcept for an extended period of time and a delay in the development of batiraxcept. Further, in order to maintain our development timelines in the event of a change in a third-party contract manufacturer, we may incur significantly higher costs to manufacture batiraxcept.

If third-party vendors, upon whom we rely to conduct our preclinical studies or clinical trials, do not perform or fail to comply with strict regulations, these studies or trials may be delayed, terminated, or fail, or we could incur significant additional expenses, which could materially harm our business.

We have limited resources dedicated to designing, conducting and managing our preclinical studies and clinical trials. We have historically relied on, and intend to continue to rely on, third parties, including CROs, consultants and principal investigators, to assist us in designing, managing, conducting, monitoring and analyzing the data from our preclinical studies and clinical trials. In addition, institution sponsored clinical trials, such as the one being conducted by M.D. Anderson Cancer that uses batiraxcept in combination AstraZeneca Pharmaceuticals LP's medicinal product Durvalumab, will be conducted by the institution. We rely on these vendors and individuals to perform many facets of the clinical development process on our behalf, including conducting preclinical studies, the recruitment of sites and subjects for participation in our clinical trials, maintenance of good relations with the clinical sites, and ensuring that these sites are conducting our trials in compliance with the trial protocol and applicable regulations. If these third parties fail to perform satisfactorily, or do not adequately fulfill their obligations under the terms of our agreements with them, we may not be able to enter into alternative arrangements without undue delay or additional expenditures, and therefore the preclinical studies and clinical trials of our clinical product candidate, batiraxcept, may be delayed or prove unsuccessful.

Further, the FDA, the EMA, or similar regulatory authorities in other countries, may inspect some of the clinical sites participating in our clinical trials or our third-party vendors' sites to determine if our clinical trials are being conducted according to good clinical practices, or GCPs, or similar regulations. If we or a regulatory authority determine that our third-party vendors are not in compliance with, or have not conducted our clinical trials according to applicable regulations, we may be forced to exclude certain data from the results of the trial, or delay, repeat or terminate such clinical trials.

We rely on third parties to conduct, supervise and monitor our clinical trials, and if those third parties perform in an unsatisfactory manner, it may harm our business.

We rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials, and we expect to have limited influence over their actual performance.

We also rely upon CROs to monitor and manage data for our clinical programs, as well as the execution of future nonclinical studies. We expect to control only certain aspects of our CROs' activities. Nevertheless, we will be responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards and our reliance on the CROs does not relieve us of our regulatory responsibilities.

We and our CROs will be required to comply with the Good Laboratory Practices and GCPs, which are regulations and guidelines enforced by the FDA and are also required by the Competent Authorities of the Member States of the EEA and comparable foreign regulatory authorities in the form of International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use guidelines for any of our product candidates that are in preclinical and clinical development. The Regulatory authorities enforce GCPs through periodic inspections of trial sponsors, principal investigators and clinical trial sites. If we or our CROs fail to comply with GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. Accordingly, if our CROs fail to comply with these regulations or fail to recruit a sufficient number of subjects, we may be required to repeat clinical trials, which would delay the regulatory approval process and increase our costs.

Our CROs are not our employees, and we do not control whether or not they devote sufficient time and resources to our future clinical and nonclinical programs. These CROs may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials, or other drug development activities which could harm our competitive position. We face the risk of potential unauthorized disclosure or misappropriation of our intellectual property by CROs, which may reduce our trade secret protection and allow our potential competitors to access and exploit our proprietary technology. If our CROs do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for any other reasons, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize any product candidate that we develop. As a result, our financial results and the commercial prospects for any product candidate that it develops would be harmed, its costs could increase, and our ability to generate revenues could be delayed.

If our relationship with these CROs terminate, we may not be able to enter into arrangements with alternative CROs or do so on commercially reasonable terms. Switching or adding additional CROs involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Though we intend to carefully manage our relationships with our CROs, there can be no assurance that it will not encounter challenges or delays in the future or that these delays or challenges will not have an adverse impact on our business, financial condition and prospects.

Our future success depends on our ability to retain executive officers and attract, retain and motivate qualified personnel.

We are highly dependent on our executive officers and the other principal members of our management and scientific teams. The employment of our executive officers is at-will and our executive officers may terminate their employment at any time. The loss of the services of any of our senior executive officers could impede the achievement of our research, development and commercialization objectives. We do not maintain "key person" insurance for any executive officer or employee.

Recruiting and retaining qualified scientific, clinical, manufacturing and sales and marketing personnel is also critical to our success. We may not be able to attract and retain these personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. Our industry has experienced an increasing rate of turnover of management and scientific personnel in recent years. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist it in devising our research and development and commercialization strategy. Our consultants and advisors may be employed by third parties and have commitments under consulting or advisory contracts with other entities that may limit their availability to advance our strategic objectives. If any of these advisors or consultants can no longer dedicate a sufficient amount of time to the company, our business may be harmed.

Many of the other pharmaceutical companies that we compete against for qualified personnel and consultants have greater financial and other resources, different risk profiles and a longer history in the industry than we do. They also may provide more diverse opportunities and better chances for career advancement. Some of these characteristics may be more appealing to high-quality candidates and consultants than what it has to offer. If we are unable to continue to attract and retain high-quality personnel and consultants, the rate and success at which we can select and develop our clinical product candidate, batiraxcept, and our business will be limited.

Risks Related to Clinical Development, Regulatory Approval and Commercialization

If the results from preclinical studies or clinical trials of batiraxcept are unfavorable, we could be delayed or precluded from its further development or commercialization, which could materially harm our business.

In order to further advance the development of, and ultimately receive marketing approval to sell batiraxcept, we must conduct extensive preclinical studies and clinical trials to demonstrate our safety and efficacy to the satisfaction of the FDA or similar regulatory authorities in other countries, as the case may be. Preclinical studies and clinical trials are expensive, complex, can take many years to complete, and have highly uncertain outcomes. Delays, setbacks, or failures can and do occur at any time, and in any phase of preclinical or clinical testing, and can result from concerns about safety, tolerability, toxicity, a lack of demonstrated biologic activity or improved efficacy over similar products that have been approved for sale or are in more advanced stages of development, poor study or trial design, and issues related to the formulation or manufacturing process of the materials used to conduct the trials. The results of prior preclinical studies or early-stage clinical trials are not predictive of the results we may observe in late-stage clinical trials, especially since the number of subjects in our completed clinical trials was small. In many cases, product candidates in clinical development may fail to show the desired tolerability, safety and efficacy characteristics, despite having favorably demonstrated such characteristics in preclinical studies or early-stage clinical trials.

In addition, we may experience numerous unforeseen events during, or as a result of, preclinical studies and the clinical trial process, which could delay or impede our ability to advance the development of, receive marketing approval for, or commercialize our clinical product candidate, batiraxcept, including, but not limited to:

- communications with the FDA, or similar regulatory authorities in different countries, regarding the scope or design of a trial or trials, or placing the development of a product candidate on clinical hold or delaying the next phase of development until questions or issues are satisfactorily resolved, including performing additional studies to answer their queries;
- regulatory authorities or institutional review boards ("IRBs") not authorizing us to commence or conduct a clinical trial at a prospective trial site or delays in reaching or fail to reach agreement on acceptable clinical trial contracts or clinical trial protocols with prospective trial sites;
- enrollment in our clinical trials being delayed, or proceeding at a slower pace than we expected, because we have difficulty recruiting participants or participants drop out of our clinical trials at a higher rate than we anticipated;
- our third-party contractors, upon whom we rely to conduct preclinical studies, clinical trials and the manufacturing of our clinical trial materials, failing to comply with regulatory requirements or meet their contractual obligations to us in a timely manner;
- having to suspend or ultimately terminate a clinical trial if participants are being exposed to unacceptable health or safety risks;
- regulatory authorities or IRBs requiring that we hold, suspend or terminate our preclinical studies and clinical trials for various reasons, including non-compliance with regulatory requirements; and
- the supply or quality of material necessary to conduct our preclinical studies or clinical trials being insufficient, inadequate or unavailable.

Even if the data collected from preclinical studies or clinical trials involving batiraxcept, demonstrate a satisfactory tolerability, safety and efficacy profile, such results may not be sufficient to support the submission of a BLA to obtain regulatory approval from the FDA in the United States, or other similar regulatory authorities in other foreign jurisdictions, which is required for us to market and sell batiraxcept.

Clinical trials are very expensive, time-consuming, difficult to design and implement and involve an uncertain outcome, and if they fail to demonstrate safety and efficacy to the satisfaction of the FDA, or similar regulatory authorities, we will be unable to commercialize our clinical product candidate, batiraxcept.

Batiraxcept is still in clinical development and will require extensive additional clinical testing before we are prepared to submit a BLA for regulatory approval for any indication or for any treatment regime. We cannot predict with any certainty if or when we might submit a BLA for regulatory approval for batiraxcept, or whether any such future BLA would be approved by the FDA. Human clinical trials are very expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. For instance, the FDA may not agree with endpoints for any clinical trial we propose, which may delay the commencement of our clinical trials. The clinical trial process is also time-consuming. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. A product candidate in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials, and the results of our Phase 1 clinical trial of the clinical product candidate as well as the pre-clinical results may not be predictive of the results of our Phase 2 or Phase 3 trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or adverse safety profiles.

Moreover, preclinical and clinical data are often susceptible to multiple interpretations and analyses. Many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their products. Success in preclinical testing and early clinical trials does not ensure that later clinical trials, which involve many more subjects and the results of later clinical trials may not replicate the results of prior clinical trials and preclinical testing. For example, in March 2022 we announced that we are seeking to revise the statistical analysis plan for our adaptive design Phase 3 trial of batiraxcept in PROC by omitting the interim analysis in the trial. The current design includes an interim analysis that would allow an additional 100 bevacizumab naïve patients to be enrolled to balance the bevacizumab populations should the interim analysis suggest additional bevacizumab naïve patients are potentially needed to increase the chance for success at the end of the trial. We believe we can enroll the number of bevacizumab naïve patients needed to have a potentially successful study, but our belief may be incorrect, and if we proceed with the revision to the statistical analysis plan we may ultimately have negative trial results or indeterminate trial results that are not able to support BLA approval.

If we are required to conduct additional clinical trials or other testing of batiraxcept beyond those that we currently contemplate, if we are unable to successfully complete clinical trials of batiraxcept or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- be delayed in obtaining marketing approval for batiraxcept require additional funding not budgeted for;
- not obtain marketing approval at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements; or
- have the product removed from the market after obtaining marketing approval.

Product development costs will also increase if we experience delays in testing or in receiving marketing approvals. We do not know whether any clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our clinical product candidate, batiraxcept, could allow our competitors to bring products to market before we do, and could impair our ability to successfully commercialize batiraxcept, any of which may harm our business and results of operations.

Enrollment and retention of subjects in clinical trials is an expensive and time-consuming process and could be made more difficult or rendered impossible by multiple factors outside our control.

We may encounter delays in enrolling, or be unable to enroll, a sufficient number of participants to complete any of our clinical trials especially in light of the COVID-19 pandemic. Once enrolled, we may be unable to retain a sufficient number of participants to complete any of our trials. Late-stage clinical trials of batiraxcept may require the enrollment and retention of large numbers of subjects. Subject enrollment and retention in clinical trials depends on many factors, including the size of the subject population, the nature of the trial protocol, the existing body of safety and efficacy data with respect to the trial drug, the number and nature of competing treatments and ongoing clinical trials of competing drugs for the same indication, the proximity of subjects to clinical sites and the eligibility criteria for the trial.

Furthermore, any negative results we may report in clinical trials of batiraxcept, negative results reported from clinical trials conducted by our collaborators or negative results of similar product candidates may make it difficult or impossible to recruit and retain participants in other clinical trials of that same clinical product candidate. Delays or failures in planned subject enrollment or retention may result in increased costs, program delays or both, which could have a harmful effect on its ability to develop its clinical product candidate, or could render further development impossible. In addition, we expect to rely on CROs and clinical trial sites to ensure proper and timely conduct of our future clinical trials and, while we intend to enter into agreements governing our services, we will be limited in our ability to compel our actual performance in compliance with applicable regulations. Enforcement actions brought against these third parties may cause further delays and expenses related to our clinical development programs.

We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.

Development of cancer treatments is highly competitive and subject to rapid and significant technological advancements. In particular, we face competition from various sources, including larger and better funded pharmaceutical, specialty pharmaceutical and biotechnology companies, as well as academic institutions, governmental agencies and public and private research institutions. These competitors are focused on delivering therapeutics for the treatment of various cancers with products that are available and have gained market acceptance as the standard treatment protocol. Further, it is likely that additional drugs or other treatments will become available in the future for the treatment of certain cancers.

Many of our existing or potential competitors have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development of products for the treatment of cancer, as well as in obtaining regulatory approvals of those products in the United States and in foreign countries. Our current and potential future competitors also have significantly more experience commercializing drugs that have been approved for marketing. Mergers and acquisitions in the pharmaceutical and biotechnology industries could result in even more resources being concentrated among a small number of our competitors.

Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries. Our competitors may succeed in developing, acquiring or licensing, on an exclusive basis, drugs that are more effective or less costly than any product candidate that we may develop.

We will face competition from other drugs currently approved or that will be approved in the future for the treatment of the other infectious diseases we are currently targeting. Therefore, our ability to compete successfully will depend largely on our ability to:

- develop and commercialize product candidates that are superior to other products in the market;
- demonstrate through our clinical trials that our clinical product candidate, batiraxcept, is differentiated from existing and future therapies;
- attract qualified scientific and commercial personnel;
- obtain patent or other proprietary protection for batiraxcept ;
- obtain required regulatory approvals;
- obtain coverage and adequate reimbursement from, and negotiate competitive pricing with, third-party payors; and
- successfully develop and commercialize, independently or with collaborators, new product candidates.

The availability of our competitors' products could limit the demand, and the price we are able to charge, for any product candidate we develop. The inability to compete with existing or subsequently introduced therapies would have an adverse impact on our business, financial condition and prospects.

Established pharmaceutical companies may invest heavily to accelerate discovery and development of novel compounds or to in-license novel compounds that could make our product candidate less competitive. In addition, any new products that competes with an approved product must demonstrate compelling advantages in efficacy, convenience, tolerability and safety in order to overcome price competition and to be commercially successful. Accordingly, our competitors may succeed in obtaining patent protection, discovering, developing, receiving the FDA's approval for or commercializing medicines before we do, which would have an adverse impact on our business and results of operations.

Our clinical product candidate, batiraxcept, may cause adverse effects or have other properties that could delay or prevent our regulatory approval or limit the scope of any approved label or market acceptance.

Adverse events caused by batiraxcept could cause reviewing entities, clinical trial sites or regulatory authorities to interrupt, delay or halt clinical trials and could result in the denial of regulatory approval. If an unacceptable frequency or severity of adverse events are reported in our clinical trials for batiraxcept, our ability to obtain regulatory approval for such clinical product candidate may be negatively impacted. In addition, adverse events caused by any clinical product candidate administered in combination with our product candidate could cause similar interruptions and delays, even though not caused by batiraxcept.

Furthermore, if any of our products are approved and then cause serious or unexpected side effects, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the product candidate or impose restrictions on its distribution or other risk management measures;
- regulatory authorities may require the addition of labeling statements, such as warnings or contraindications;
- we may be required to conduct additional clinical trials;
- we could be sued and held liable for injuries sustained by patients;
- we could elect to discontinue the sale of our product candidate; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of the affected product candidate and could substantially increase the costs of commercialization.

Our employees, independent contractors, principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees and contractors, including principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in fraudulent or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or other unauthorized activities that violate the laws and regulations of the FDA and other similar regulatory bodies, including those laws that require the reporting of true, complete and accurate information to such regulatory bodies, manufacturing standards, federal and state healthcare fraud and abuse and health regulatory laws and other similar foreign fraudulent misconduct laws, or laws that require the true, complete and accurate reporting of financial information or data. Misconduct by these parties may also involve the improper use or misrepresentation of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter third party misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting it from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and financial results, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals, we will not be able to commercialize, or will be delayed in commercializing, our clinical product candidate, batiraxcept, and our ability to generate revenue will be impaired.

Batiraxcept and the activities associated with our development and commercialization, including our design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale and distribution, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable authorities in other countries. Failure to obtain marketing approval for a clinical product candidate will prevent us from commercializing the clinical product candidate. We have not received approval to market batiraxcept from regulatory authorities in any jurisdiction. We only have limited experience in filing and supporting the applications necessary to gain marketing approvals and expect to rely on CROs to assist us in this process. Securing regulatory approval requires the submission of extensive preclinical and clinical data and supporting information to the various regulatory authorities for each therapeutic indication to establish the clinical product candidate’s safety and efficacy. Securing regulatory approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Batiraxcept may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may prevent it from obtaining marketing approval or prevent or limit commercial use.

The process of obtaining marketing approvals, both in the United States and elsewhere, is expensive, may take many years and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidate involved. We cannot assure you that our product candidate will ever obtain any marketing approvals in any jurisdiction. The fact that the FDA has designated the investigation of our lead development candidate for platinum-resistant recurrent ovarian cancer as a Fast Track development program, while potentially favorable, provides no assurance as to the timing or outcome of any FDA regulatory process. Fast Track status may be withdrawn if the conditions for such designation are no longer met. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations or changes in regulatory review for each submitted product application may cause delays in the approval or rejection of an application. The FDA and comparable authorities in other countries have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical or other studies, and clinical trials. In addition, varying interpretations of the data obtained from preclinical testing and clinical trials could delay, limit or prevent marketing approval of a product candidate. Additionally, any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

Even if we obtain FDA approval in the United States, we may never obtain approval for or commercialize our clinical product candidate, batiraxcept, in any other jurisdiction, which would limit our ability to realize each product's full market potential.

In order to market batiraxcept in a particular jurisdiction, we must establish and comply with numerous and varying regulatory requirements on a country-by-country basis regarding safety and efficacy. Approval by the FDA in the United States does not ensure approval by regulatory authorities in other countries or jurisdictions and approval by regulatory authorities in other countries or jurisdictions does not ensure approval by the FDA. In addition, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not guarantee regulatory approval in any other country. Approval processes vary among countries and can involve additional product candidate testing and validation and additional administrative review periods. Seeking foreign regulatory approval could result in difficulties and costs for us and require additional preclinical studies or clinical trials which could be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of batiraxcept in those countries. We do not have any product candidates approved for sale in any jurisdiction, including in international markets, and we do not have experience in obtaining regulatory approval in international markets. If we or our collaborators fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, or if regulatory approvals in international markets are delayed, our target market will be reduced and our ability to realize the full market potential of any product candidate we develop will be unrealized.

Even if we obtain regulatory approval, we will still face extensive ongoing regulatory requirements and our clinical product candidate, batiraxcept, may face future development and regulatory difficulties.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, packaging, distribution, adverse event reporting, storage, recordkeeping, export, import, advertising and promotional activities for such product candidate, among other things, will be subject to extensive and ongoing requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety, efficacy and other post-marketing information and reports, establishment registration and drug listing requirements, continued compliance with cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping and current GCP requirements for any clinical trials that we conduct post-approval. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product candidate may be marketed or to the conditions of approval. If batiraxcept receives marketing approval, the accompanying label may limit the approved use of our product, which could limit sales.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety and/or efficacy of batiraxcept. The FDA closely regulates the post-approval marketing and promotion of drugs to ensure drugs are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we do not market batiraxcept for its approved indications, we may be subject to enforcement action for off-label marketing. Violations of the Federal Food, Drug, and Cosmetic Act relating to the promotion of prescription drugs may lead to FDA enforcement actions and investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with batiraxcept, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on manufacturing such clinical product candidate;
- restrictions on the labeling or marketing of such clinical product candidate;
- restrictions on product distribution or use;

- requirements to conduct post-marketing studies or clinical trials;
- warning letters;
- withdrawal of the clinical product candidate from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of such clinical product candidate;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- refusal to permit the import or export of such clinical product candidate;
- clinical product candidate seizure; or
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of batiraxcept. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained.

Even if our clinical product candidate, batiraxcept, receives marketing approval, we may fail to achieve market acceptance by physicians, patients, third-party payors or others in the medical community necessary for commercial success.

If batiraxcept receives marketing approval, we may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. If we do not achieve an adequate level of acceptance, we may not generate significant revenues and become profitable. The degree of market acceptance, if approved for commercial sale, will depend on a number of factors, including but not limited to:

- the efficacy and potential advantages compared to alternative treatments;
- effectiveness of sales and marketing efforts;
- the cost of treatment in relation to alternative treatments;
- our ability to offer batiraxcept for sale at competitive prices;
- the convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the willingness of the medical community to offer customers our product candidate option in addition to or in the place of batiraxcept ;
- the strength of marketing and distribution support;
- the availability of third-party coverage and adequate reimbursement;
- the prevalence and severity of any side effects; and
- any restrictions on the use of our product together with other medications.

Because we expect sales of all of batiraxcept to be based on the same mechanism of action, the failure of our first product candidate to achieve market acceptance would harm our business and could require us to seek additional financing sooner than we otherwise planned.

The insurance coverage and reimbursement status of newly-approved products is uncertain. Our product candidates may become subject to unfavorable pricing regulations, third-party coverage and reimbursement practices, or healthcare reform initiatives, which would harm our business. Failure to obtain or maintain adequate coverage and reimbursement for new or current products could limit our ability to market those products and decrease our ability to generate revenue.

The regulations that govern marketing approvals, pricing, coverage, and reimbursement for new drugs vary widely from country to country. In the United States, recently enacted legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods, and negatively impact the revenue we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if any product candidates we may develop obtain marketing approval.

Our ability to successfully commercialize our product candidates also will depend in part on the extent to which coverage and adequate reimbursement for these products and treatments will be available from government health administration authorities, private health insurers, and other organizations. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. The availability of coverage and extent of reimbursement by governmental and private payors is essential for most patients to be able to afford treatments such as gene therapy products. Sales of these or other product candidates that we may identify will depend substantially, both domestically and abroad, on the extent to which the costs of our product candidates will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third-party payors. If coverage and adequate reimbursement is not available, or is available only to limited levels, we may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize a sufficient return on our investment.

The availability and extent of reimbursement by governmental and private payors is essential for most patients to be able to afford expensive treatments. Sales of batiraxcept that receive marketing approval will depend substantially, both in the United States and internationally, on the extent to which the costs of batiraxcept will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third-party payors. If reimbursement is not available, or is available only on a limited basis, we may not be able to successfully commercialize batiraxcept. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain adequate pricing that will allow it to realize a sufficient return on our investment.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe, Canada, China and other countries may cause us to price batiraxcept on less favorable terms that we currently anticipate. In many countries, particularly the countries of the European Union, the prices of medical products are subject to varying price control mechanisms as part of national health systems. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of batiraxcept to other available therapies. In general, the prices of products under such systems are substantially lower than in the United States. Other countries allow companies to fix their own prices for products but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that is able to be charged for clinical product candidates. Accordingly, in markets outside the United States, the reimbursement for products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenues and profits.

Moreover, increasing efforts by governmental and third-party payors, in the United States and internationally, to cap or reduce healthcare costs may cause such organizations to limit both coverage and level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for clinical product candidates. We expect to experience pricing pressures in connection with the sale of batiraxcept due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and surgical procedures and other treatments, has become very intense. As a result, increasingly high barriers are being erected for new products entering the marketplace.

If we fail to comply with state and federal healthcare regulatory laws, we could face substantial penalties, damages, fines, disgorgement, exclusion from participation in governmental healthcare programs, and the curtailment of operations, any of which could harm our business.

Although we do not provide healthcare services or submit claims for third party reimbursement, we are subject to healthcare fraud and abuse regulation and enforcement by federal and state governments which could significantly impact our business. The laws that may affect our ability to operate include, but are not limited to:

- the federal anti-kickback statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering, or paying remuneration, directly or indirectly, in cash or in kind, in exchange for or to induce either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service for which payment may be made, in whole or in part, under federal healthcare programs such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of this statute or specific intent to violate it;

- the civil FCA, which prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid or other third-party payors that are false or fraudulent; knowingly making using, or causing to be made or used, a false record or statement to get a false or fraudulent claim paid or approved by the government; or knowingly making, using, or causing to be made or used, a false record or statement to avoid, decrease or conceal an obligation to pay money to the federal government;

- the criminal FCA, which imposes criminal fines or imprisonment against individuals or entities who make or present a claim to the government knowing such claim to be false, fictitious or fraudulent;

- HIPAA, which created federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;

- the federal civil monetary penalties statute, which prohibits, among other things, the offering or giving of remuneration to a Medicare or Medicaid beneficiary that the person knows or should know is likely to influence the beneficiary's selection of a particular supplier of items or services reimbursable by a Federal or state governmental program;

- the federal physician sunshine requirements under the ACA, which require certain manufacturers of drugs, devices, biologics, and medical supplies to report annually to the U.S. Department of Health and Human Services information related to payments and other transfers of value to physicians, other healthcare providers, and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members; and

- state and foreign law equivalents of each of the above federal laws, such as anti-kickback and false claims laws that may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the device industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; and state laws that require device manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures.

Further, the ACA, among other things, amended the intent requirements of the federal anti-kickback statute and certain criminal statutes governing healthcare fraud. A person or entity can now be found guilty of violating the statute without actual knowledge of the statute or specific intent to violate it. In addition, the ACA provided that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the FCA. If a government authority were to conclude that we provide improper advice to our customers or encouraged the submission of false claims for reimbursement, we could face action against us by government authorities. Any violations of these laws, or any action against us for violation of these laws, even if we successfully defend against it, could result in a material adverse effect on our reputation, business, results of operations and financial condition.

We have entered into consulting and scientific advisory board arrangements with physicians and other healthcare providers. Compensation for some of these arrangements includes the provision of stock options. While we have worked to structure our arrangements to comply with applicable laws, because of the complex and far-reaching nature of these laws, regulatory agencies may view these transactions as prohibited arrangements that must be restructured, or discontinued, or for which we could be subject to other significant penalties. We could be adversely affected if regulatory agencies interpret our financial relationships with providers who influence the ordering of and use our products to be in violation of applicable laws.

The scope and enforcement of each of these laws is uncertain and subject to rapid change in the current environment of healthcare reform, especially in light of the lack of applicable precedent and regulations. Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry.

Responding to investigations can be time- and resource-consuming and can divert management's attention from the business. Additionally, as a result of these investigations, healthcare providers and entities may have to agree to additional onerous compliance and reporting requirements as part of a consent decree or corporate integrity agreement. Any such investigation or settlement could increase our costs or otherwise have an adverse effect on our business.

Product liability lawsuits against us could cause us to incur substantial liabilities and could limit the commercialization of any product candidates we may develop.

We face an inherent risk of product liability exposure related to the testing of batiraxcept in human clinical trials and will face an even greater risk if we commercially sell any products that we may develop after approval. Any adverse reactions in our clinical trials could be deemed to be related to batiraxcept and could result in claims from these injuries and we could incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates that we may develop;

- injury to our reputation and significant negative media attention;

- withdrawal of clinical trial participants;

- significant costs to defend any related litigation;

- substantial monetary awards to trial subjects or patients;

- loss of revenue; and
- the inability to commercialize any products we may develop.

Although we maintain product liability insurance coverage in the amount of up to $10 million per claim and in the aggregate, we may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage as we continue clinical trials and if we successfully commercialize any products. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

If we are unable to establish sales, marketing and distribution capabilities either on our own or in collaboration with third parties, we may not be successful in commercializing our clinical product candidate, batiraxcept, ***if approved.***

We do not have any infrastructure for the sales, marketing or distribution of batiraxcept, and the cost of establishing and maintaining such an organization may exceed the cost-effectiveness of doing so. In order to market any product candidate that may be approved, we must build our sales, distribution, marketing, managerial and other non-technical capabilities or make arrangements with third parties to perform these services. To achieve commercial success for any product candidate for which we have obtained marketing approval, we will need a sales and marketing organization. We expect to build a focused sales, distribution and marketing infrastructure to market any other product candidates in the United States, if approved. There are significant expenses and risks involved with establishing our own sales, marketing and distribution capabilities, including our ability to hire, retain and appropriately incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities could delay any product candidate launch, which would adversely impact commercialization.

Factors that may inhibit our efforts to commercialize batiraxcept on our own include:

- Our inability to recruit, train and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to physicians or attain adequate numbers of physicians to administer our products; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

We intend to pursue collaborative arrangements regarding the sale and marketing of batiraxcept, if approved, for certain international markets; however, we may not be able to establish or maintain such collaborative arrangements, if able to do so, that our collaborators may not have effective sales. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful.

If we are unable to build our own sales force in the United States or negotiate a collaborative relationship for the commercialization of batiraxcept outside the United States we may be forced to delay the potential commercialization or reduce the scope of our sales or marketing activities. We may have to enter into arrangements with third parties or otherwise at an earlier stage than we would otherwise choose and we may be required to relinquish rights to our intellectual property or otherwise agree to terms unfavorable to us, any of which may have an adverse effect on our business, operating results and prospects.

We may be competing with many companies that currently have extensive and well-funded marketing and sales operations. Without an internal team or the support of a third party to perform marketing and sales functions, we may be unable to compete successfully against these more established companies.

If we obtain approval to commercialize our clinical product candidate, batiraxcept outside of the United States, a variety of risks associated with international operations could harm our business.

If our clinical product candidate is approved for commercialization, we intend to enter into agreements with third parties to market them in certain jurisdictions outside the United States such as we have with 3D Medicine. We expect that we will be subject to additional risks related to international operations or entering into international business relationships, including:

- different regulatory requirements for drug approvals and rules governing drug commercialization in foreign countries;
- reduced protection for intellectual property rights;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign reimbursement, pricing and insurance regimes;
- foreign taxes;

- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- potential noncompliance with the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.K. Bribery Act 2010 and similar anti-bribery and anticorruption laws in other jurisdictions;
- product shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geopolitical actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

We have no prior experience in these areas. In addition, there are complex regulatory, tax, labor and other legal requirements imposed by both the European Union and many of the individual countries in Europe as well as China with which we will need to comply.

Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our clinical product candidate, batiraxcept, and affect the prices we may obtain.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, prevent or delay marketing approval of our clinical product candidate, restrict or regulate post-approval activities and affect our ability to profitably sell any product candidate for which we obtain marketing approval. Changes in regulations, statutes or the interpretation of existing regulations could impact our business in the future by requiring, for example: (i) changes to our manufacturing arrangements, (ii) additions or modifications to product labeling, (iii) the recall or discontinuation of our products or (iv) additional record-keeping requirements. If any such changes were to be imposed, they could adversely affect our business, financial condition and results of operations.

Among policy makers in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. In March 2010, the ACA was passed, which substantially changed the way healthcare is financed by both the government and private insurers, and significantly impacts the U.S. pharmaceutical industry. The ACA, among other things, subjects biological products to potential competition by lower-cost biosimilars, addresses a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, increases the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extends the rebate program to individuals enrolled in Medicaid managed care organizations, establishes annual fees and taxes on manufacturers of certain branded prescription drugs, and creates a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D.

Some of the provisions of the ACA have yet to be fully implemented, while certain provisions have been subject to judicial and Congressional challenges. Congress has considered legislation that would repeal or repeal and replace all or part of the ACA, and it is unclear how such challenges and other efforts to repeal and replace the ACA will impact the ACA and our business.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our products. Such reforms could have an adverse effect on anticipated revenue from product candidates that we may successfully develop and for which we may obtain regulatory approval and may affect our overall financial condition and ability to develop product candidates.

We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products, which could result in reduced demand for batiraxcept or additional pricing pressures. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain patent protection for our clinical product candidate, batiraxcept, or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets.

We rely upon a combination of patents, trade secret protection and confidentiality agreements to protect the intellectual property related to our drug development programs and clinical product candidate. Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries. We seek to protect our proprietary position by filing patent applications in the United States and abroad related to our development programs and clinical product candidate. The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner.

It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our product candidates in the United States or in other countries. There is no assurance that all potentially relevant prior art that could invalidate our patents or that could prevent our pending patent applications from issuing as patents have been found. Even if patents do successfully issue, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed, invalidated, or held unenforceable. Any successful challenge to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of our product candidates or companion diagnostic that we may develop. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a product candidate and companion diagnostic under patent protection could be reduced.

If the patent applications we hold with respect to our platform technology and clinical product candidate fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for batiraxcept, it could dissuade companies from collaborating with us to develop future product candidates and threaten our ability to commercialize future drugs. Any such outcome could harm our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the laws of foreign countries may not protect our rights to the same extent as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than U.S. law does. Publications of discoveries in scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned or licensed patents or pending patent applications, or that we were the first to file for patent protection of such inventions. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued that protect our technology or product candidates, in whole or in part, or which effectively prevent others from commercializing competitive technologies. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection.

Recent patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of ours issued patents. In 2011, the Leahy-Smith America Invents Act (the "Leahy-Smith Act"), was signed into law. The Leahy-Smith Act includes a number of significant changes to United States patent law. These include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. The U.S. Patent Office recently developed new regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first to file provisions, only became effective in 2013. Accordingly, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have an adverse effect on our business and financial condition.

Moreover, we may be subject to a third party pre-issuance submission of prior art to the USPTO, or become involved in derivation, reexamination, *inter partes* review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. In other countries, we may be subject to or become involved in opposition proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission or proceeding could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or product candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize product candidates without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and product candidates. Moreover, patents have a limited lifespan. In the United States and other countries, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available; however, the life of a patent, and the protection it affords, is limited. Without patent protection for our current or future product candidates, we may be open to competition from generic versions of such product candidates. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, we owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing product candidates similar or identical to ours.

We may be involved in lawsuits to protect or enforce our patents, the patents of our licensors or our other intellectual property rights, which could be expensive, time consuming and unsuccessful.

Competitors and other third parties may infringe or otherwise violate our patents, the patents of our licensors, of our licensees or our other intellectual property rights. To counter infringement or unauthorized use, we may be required to file legal claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours or our licensors is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that such patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing. The initiation of a claim against a third party may also cause the third party to bring counter claims against us such as claims asserting that our patents are invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, nonenablement or lack of statutory subject matter. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant material information from the USPTO, or made a materially misleading statement, during prosecution. Third parties may also raise similar validity claims before the USPTO in post-grant proceedings such as *inter partes* review, or post-grant review, or oppositions or similar proceedings outside the United States, in parallel with litigation or even outside the context of litigation. The outcome following legal assertions of invalidity and unenforceability is unpredictable. We cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. For the patents and patent applications that we have licensed, we may have limited or no right to participate in the defense of any licensed patents against challenge by a third party. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of any future patent protection on our current or future product candidates. Such a loss of patent protection could harm our business.

We may not be able to prevent, alone or with our licensors or licensees, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States. Our business could be harmed if in litigation the prevailing party does not offer us a license on commercially reasonable terms. Any litigation or other proceedings to enforce our intellectual property rights may fail, and even if successful, may result in substantial costs and distract our management and other employees.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have an adverse effect on the price of our common stock.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our clinical product candidate, batiraxcept.

The United States has recently enacted and implemented wide-ranging patent reform legislation. The United States Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on actions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce patents that we have licensed or that we might obtain in the future.

If a third party claims we are infringing on their intellectual property rights, we could incur significant expenses, or be prevented from further developing or commercializing our clinical product candidate, batiraxcept, which could materially harm our business.

Our success will also depend on our ability to operate without infringing the patents and other proprietary intellectual property rights of third parties. This is generally referred to as having "freedom to operate." We have not conducted an in-depth freedom to operate search which would be time consuming and costly. The biotechnology and pharmaceutical industries are characterized by extensive litigation regarding patents and other intellectual property rights. The defense and prosecution of intellectual property claims, interference proceedings and related legal and administrative proceedings, both in the United States and internationally, involve complex legal and factual questions. As a result, such proceedings are lengthy, costly and time-consuming, and their outcome is highly uncertain. We may become involved in protracted and expensive litigation in order to determine the enforceability, scope and validity of the proprietary rights of others, or to determine whether we have freedom to operate with respect to the intellectual property rights of others. For example, we are aware of U.S. Patent Nos. 8,168,415 and 8,920,799, which claim AXL fusion proteins and their use in treating cancer. In the event that one of these patents or another patent is successfully asserted against our GAS6-AXL program in the future, we may be unable to market the product, absent a license from the patentee, which may not be available on commercially reasonable terms, if at all.

Patent applications in the United States are, in most cases, maintained in secrecy until approximately 18 months after the patent application is filed. The publication of discoveries in the scientific or patent literature frequently occurs substantially later than the date on which the underlying discoveries were made. Therefore, patent applications relating to product candidates similar to ours may have already been filed by others without our knowledge. In the event that a third party has also filed a patent application covering batiraxcept, we may have to participate in an adversarial proceeding, such as an interference proceeding, in the USPTO, or similar proceedings in other countries, to determine the priority of invention. In the event an infringement claim is brought against us, we may be required to pay substantial legal fees and other expenses to defend such a claim and, if we are unsuccessful in defending the claim, we may be prevented from pursuing the development and commercialization of a product candidate and may be subject to injunctions and/or damage awards.

In the future, the USPTO or a foreign patent office may grant patent rights covering batiraxcept to third parties. Subject to the issuance of these future patents, the claims of which will be unknown until issued, we may need to obtain a license or sublicense to these rights in order to have the appropriate freedom to further develop or commercialize them. Any required licenses may not be available to us on acceptable terms, if at all. If we need to obtain such licenses or sublicenses, but are unable to do so, we could encounter delays in the development of batiraxcept, or be prevented from developing, manufacturing and commercializing batiraxcept at all. If it is determined that we have infringed an issued patent and do not have freedom to operate, we could be subject to injunctions, and/or compelled to pay significant damages, including punitive damages. In cases where we have in-licensed intellectual property, our failure to comply with the terms and conditions of such agreements could harm our business.

It is becoming common for third parties to challenge patent claims on any successfully developed product candidate or approved drug. If we or our licensees or collaborators become involved in any patent litigation, interference or other legal proceedings, we could incur substantial expense, and the efforts and attention of our technical and management personnel could be significantly diverted. A negative outcome of such litigation or proceedings may expose us to the loss of our proprietary position or to significant liabilities, or require us to seek licenses that may not be available from third parties on commercially acceptable terms, if at all. We may be restricted or prevented from developing, manufacturing and selling batiraxcept in the event of an adverse determination in a judicial or administrative proceeding, or if we fail to obtain necessary licenses.

We may not be able to protect our intellectual property rights throughout the world, which could impair our business.

Filing, prosecuting and defending patents covering batiraxcept throughout the world would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we may obtain patent protection, but where patent enforcement is not as strong as that in the United States. These other products may compete with batiraxcept in jurisdictions where we do not have any issued or licensed patents and any future patent claims or other intellectual property rights may not be effective or sufficient to prevent them from so competing.

Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

We seek to protect our proprietary technology in part by entering into confidentiality agreements with third parties and, if applicable, material transfer agreements, consulting agreements or other similar agreements with our advisors, employees, third-party contractors and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have an adverse effect on our business and results of operations.

In addition, these agreements typically restrict the ability of our advisors, employees, third-party contractors and consultants to publish data potentially relating to our trade secrets, although our agreements may contain certain limited publication rights. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of our agreements with third parties, independent development or publication of information by any of our third-party collaborators. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submissions, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary fee payments and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we and our licensors fail to maintain the patents and patent applications covering batiraxcept, our competitive position would be adversely affected.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business or permit us to maintain our competitive advantage. The following examples are illustrative:

- Others may be able to make products that are similar to our product candidates but that are not covered by the claims of the patents that we license;
- Our licensors or collaborators might not have been the first to make the inventions covered by an issued patent or pending patent application;
- Our licensors or collaborators might not have been the first to file patent applications covering an invention;
- Others may independently develop similar or alternative technologies or duplicate any of our or our licensors' technologies without infringing our intellectual property rights;
- Pending patent applications may not lead to issued patents;
- Issued patents may not provide us with any competitive advantages, or may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- Our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- We may not develop or in-license additional proprietary technologies that are patentable; and
- The patents of others may have an adverse effect on our business.

Should any of these events occur, they could significantly harm our business, results of operations and prospects.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Many of our employees, including our senior management, were previously employed at other biotechnology or pharmaceutical companies. These employees typically executed proprietary rights, non-disclosure and non-competition agreements in connection with their previous employers. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. We are not aware of any threatened or pending claims related to these matters, but in the future litigation may be necessary to defend against such claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

Risks Related to the ownership of our common stock

Our stock price has fluctuated in the past, has recently been volatile and may be volatile in the future, and as a result, investors in our common stock could incur substantial losses.

Our stock price has fluctuated in the past, has recently been volatile and may be volatile in the future. From January 1, 2021 through December 31, 2021 the reported sale price of our common stock has fluctuated between $2.19 and $9.24 per share. Following the announcement of the failure of our Phase 3 clinical trial to meet its primary endpoint in September 2017, our stock price declined substantially. In addition, the ongoing COVID-19 pandemic has caused broad stock market and industry fluctuations. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, investors may experience losses on their investment in our common stock. The market price for our common stock may be influenced by many factors, including the following:

- investor reaction to our business strategy;
- the success of competitive products or technologies;
- results of clinical studies of batiraxcept or future product candidates or those of our competitors;
- regulatory or legal developments in the United States and other countries, especially changes in laws or regulations applicable to our products;
- introductions and announcements of new products by us, results of clinical trials, our commercialization partners, or our competitors, and the timing of these introductions or announcements;
- actions taken by regulatory agencies with respect to our products, clinical studies, manufacturing process or sales and marketing terms;
- variations in our financial results or those of companies that are perceived to be similar to us;
- the success of our efforts to acquire or in-license additional products or product candidates;
- developments concerning our collaborations, including but not limited to those with our sources of manufacturing supply and our commercialization partners;
- developments concerning our ability to bring our manufacturing processes to scale in a cost-effective manner;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- developments or disputes concerning patents or other proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our products;
- our ability or inability to raise additional capital and the terms on which we raise it;
- the recruitment or departure of key personnel;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- declines in the market prices of stocks generally;
- actual or anticipated changes in earnings estimates or changes in stock market analyst recommendations regarding our common stock, other comparable companies or our industry generally;
- trading volume of our common stock;
- sales of our common stock by us or our stockholders;
- general economic, industry and market conditions;
- other events or factors, including those resulting from such events, or the prospect of such events, including war, terrorism and other international conflicts, public health issues including health epidemics or pandemics, such as the ongoing COVID-19 pandemic, and natural disasters such as fire, hurricanes, earthquakes, tornados or other adverse weather and climate conditions, whether occurring in the United States or elsewhere, could disrupt our operations, disrupt the operations of our suppliers or result in political or economic instability; and
- the other risks described in this “Risk factors” section.

These broad market and industry factors may seriously harm the market price of our common stock, regardless of our operating performance. Since the stock price of our common stock has fluctuated in the past, has been recently volatile and may be volatile in the future, investors in our common stock could incur substantial losses. In the past, following periods of volatility in the market, securities class-action litigation has often been instituted against companies. Such litigation, if instituted against us, could result in substantial costs and diversion of management's attention and resources, which could materially and adversely affect our business, financial condition, results of operations and growth prospects.

Our executive officers, directors, and entities under our control, and principal stockholders will continue to maintain the ability to control or significantly influence all matters submitted to stockholders for approval.

As of March 25, 2022, our executive officers, directors and entities under their control, and principal stockholders, in the aggregate, owned shares representing approximately 31.8% of our common stock. Dr. Fredric N. Eshelman, our Executive Chairman beneficially owns 19.99% of our common stock. As a result, Dr. Eshelman acting on his own, would be able to control or significantly influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, Dr. Eshelman will control or significantly influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of voting power could delay or prevent an acquisition of our company on terms that other stockholders may desire.

We incur significant costs as a result of operating as a public company, and our management devotes substantial time to new compliance initiatives.

As a public company, we have incurred and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company. We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, the other rules and regulations of the SEC, and the rules and regulations of The Nasdaq Global Select Market, or Nasdaq. Compliance with the various reporting and other requirements applicable to public companies requires considerable time and attention of management. For example, the Sarbanes-Oxley Act and the rules of the SEC and national securities exchanges have imposed various requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls. Our management and other personnel are devoting and will continue to need to devote a substantial amount of time to these compliance initiatives. These rules and regulations will continue to increase our legal and financial compliance costs and will make some activities more time-consuming and costly. The impact of these events could also make it more difficult for us to attract and retain qualified personnel to serve on our board of directors, our board committees, or as executive officers.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. In addition, we will be required to have our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting beginning with our annual report on Form 10-K following the date on which we are once again an accelerated filer and are no longer an emerging growth company. Our compliance with Section 404 of the Sarbanes-Oxley Act will require that we incur substantial accounting expense and expend significant management efforts. If we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities, which would require additional financial and management resources.

Our ability to successfully implement our business plan and comply with Section 404 requires us to be able to prepare timely and accurate consolidated financial statements. We expect that we will need to continue to improve existing, and implement new operational and financial systems, procedures and controls to manage our business effectively. Any delay in the implementation of, or disruption in the transition to, new or enhanced systems, procedures or controls, may cause our operations to suffer and we may be unable to conclude that our internal control over financial reporting is effective and to obtain an unqualified report on internal controls from our auditors as required under Section 404 of the Sarbanes-Oxley Act. This, in turn, could have an adverse impact on trading prices for our common stock, and could adversely affect our ability to access the capital markets.

We are currently a "smaller reporting company," as defined in the Exchange Act and have elected to take advantage of certain of the scaled disclosures available to smaller reporting companies.

We are currently a "smaller reporting company," as defined in the Exchange Act and have elected to take advantage of certain of the scaled disclosures available to smaller reporting companies. To the extent that we continue to qualify as a "smaller reporting company" as such term is defined in Rule 12b-2 under the Exchange Act, certain exemptions are available to us from certain disclosure requirements that are applicable to other public companies that are not a "smaller reporting company," including exemption from compliance with the auditor attestation requirements pursuant to SOX and reduced disclosure about our executive compensation arrangements.

As a result, the information we provide stockholders will be different than the information that is available with respect to other public companies. In this Annual Report on Form 10-K, we have not included all of the executive compensation related information that would be required if we were not a smaller reporting company, nor have we included all of the quantitative and qualitative disclosures about market risk that would be required if we were not a smaller reporting company. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock price may be more volatile.

An active trading market for our common stock may not be maintained, or we may fail to satisfy applicable Nasdaq listing requirements.

Our common stock is currently traded on Nasdaq, but we can provide no assurance that we will be able to maintain an active trading market for our shares on Nasdaq or any other exchange in the future. The fact that a significant portion of our outstanding shares of common stock is closely held by a few individuals, results in it being more difficult for us to maintain an active trading market. If there is no active market for our common stock, it may be difficult for our stockholders to sell shares without depressing the market price for the shares or at all, our stock price could decline, and we may be unable to maintain compliance with applicable Nasdaq listing requirements.

If securities or industry analysts do not publish research, or publish inaccurate or unfavorable research, about our business, our stock price and trading volume could decline.

The trading market for our common stock depends, in part, on the research and reports that securities or industry analysts publish about us or our business. The analysts that cover us may cease to publish research on our company at any time in their discretion. If one or more of these analysts cease coverage of our company, or fail to publish reports on us regularly, demand for our common stock could decrease, which might cause our stock price and trading volume to decline. In addition, if one or more of the analysts who cover us downgrade our stock or publish inaccurate or unfavorable research about our business, our stock price would likely decline. If our operating results fail to meet the forecast of analysts, our stock price would likely decline.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Because our board of directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. Among others, these provisions include the following:

- our board of directors is divided into three classes with staggered three-year terms which may delay or prevent a change of our management or a change in control;
- our board of directors has the right to elect directors to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- our stockholders are not able to act by written consent or call special stockholders' meetings; as a result, a holder, or holders, controlling a majority of our capital stock are not able to take certain actions other than at annual stockholders' meetings or special stockholders' meetings called by the board of directors, the chairman of the board, the chief executive officer or the president;
- our certificate of incorporation prohibits cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- our stockholders are required to provide advance notice and additional disclosures in order to nominate individuals for election to the board of directors or to propose matters that can be acted upon at a stockholders' meeting, which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of our company; and
- our board of directors are able to issue, without stockholder approval, shares of undesignated preferred stock, which makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for certain disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any derivative action or proceeding brought on behalf of the Company, any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Company to the Company or the Company's stockholders, any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law or any action asserting a claim governed by the internal affairs doctrine. This forum selection provision does not apply to suits brought to enforce a duty or liability created by the Securities Act or the Exchange Act or any claim for which the federal courts have exclusive jurisdiction.

This forum selection provision may limit a stockholder's ability to bring certain claims in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, other employees or stockholders, which may discourage lawsuits with respect to such claims, although our stockholders will not be deemed to have waived our compliance with federal securities laws and the rules and regulations thereunder. If a court were to find this forum selection provision to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

Our employment arrangements with our executive officers may require us to pay severance benefits to any of those persons who are terminated in connection with a change in control of us, which could harm our financial condition or results.

Certain of our executive officers are parties to employment or other agreements or participants under plans that contain change in control and severance provisions providing for aggregate cash payments for severance and other benefits and acceleration of vesting of stock options in the event of a termination of employment in connection with a change in control of us. The accelerated vesting of options could result in dilution to our existing stockholders and harm the market price of our common stock. The payment of these severance benefits could harm our financial condition and results. In addition, these potential severance payments may discourage or prevent third parties from seeking a business combination with us.

Because we do not anticipate paying any cash dividends on our common stock in the foreseeable future, capital appreciation, if any, will be our stockholders' sole source of gain.

We have never declared or paid cash dividends on our common stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of existing or any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be our stockholders' sole source of gain for the foreseeable future.

Item 1B. Unresolved Staff Comments.

None

Item 2. Properties.

We do not own any real property and lease facilities in Morrisville, North Carolina, Menlo Park, California and Houston, Texas. Our principal executive offices are located in Houston, Texas where we occupy office space pursuant to the terms of a lease agreement that expires on July 31, 2022, which will automatically renew each year for a one-year term, unless a three-month notice is given to cancel. Our rent under the lease is approximately $1,000 per month.

In March 2017, we entered into an operating facility lease agreement with Bohannon Associates, a California partnership, dated March 17, 2017 (the "Master Lease") for approximately 34,500 rentable square feet of office space located at 1020 Marsh Road, Menlo Park, California (the "1020 Marsh Facility"). The lease for the 1020 Marsh Facility commenced in August 2017 for a period of 86 months with one renewal option for a five-year term. Future base rent we owe over the lease term as of December 31, 2021 is $8.3 million.

On August 1, 2021, the sublease dated June 8, 2021 (the "Sublease Agreement") by and between us and Grail, Inc., or Grail ("Subtenant") became effective, whereby we agreed to sublease to Subtenant all of the approximately 34,500 rentable square feet of office space at the 1020 Marsh Facility currently leased pursuant to the Master Lease. The sublease commenced on August 1, 2021 and the term of the sublease was through October 31, 2024, unless the Master Lease was terminated earlier due to a breach by Subtenant. Base rent Subtenant was obligated to pay us as of December 31, 2021 was $6.7 million.

In October 2018, we executed a lease agreement in Palo Alto, California for approximately 4,240 square feet for office space. The rental term of the lease commenced on October 30, 2018 and expired August 31, 2020.

In August 2020, we entered into an operating facility lease agreement with Perimeter Center 7 Pack, LLC dated August 14, 2020 for approximately 4,128 square feet of office space at 1800 Perimeter Park Suite 130, Morrisville, North Carolina. Future base rent we owe over the lease term as of December 31, 2021 is $0.5 million.

We believe that our existing facilities are adequate for our current needs.

Item 3. Legal Proceedings.

We are not currently subject to any material legal proceedings. From time to time, we may be subject to various legal proceedings and claims that arise in the ordinary course of its business activities. Litigation, regardless of the outcome, could have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 4. Mine Safety Disclosures.

Not Applicable

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Market for Registrant's Common Equity

Since October 16, 2018, our common stock has been listed on Nasdaq under the symbol "ARAV". Prior to that, from March 21, 2014 until October 16, 2018, our common stock traded on Nasdaq under the symbol "VSAR". In connection with the completion of the Merger, on October 15, 2018, our amended and restated certificate of incorporation was amended to effect, on October 16, 2018, a reverse split of our common stock at a ratio of 1-for-6.

Holders

On March 25, 2022, there were 26 stockholders of record of our common stock, one of which was Cede & Co., a nominee for Depository Trust Company, or DTC. All of the shares of our common stock held by brokerage firms, banks and other financial institutions as nominees for beneficial owners are deposited into participant accounts at DTC and are therefore considered to be held of record by Cede & Co. as one stockholder.

Dividend Policy

We have not paid dividends on our common stock. We currently intend to retain any earnings for use in the development and expansion of our business. We, therefore, do not anticipate paying cash dividends on our common stock in the foreseeable future.

Sales of Unregistered Equity Securities

There were no unregistered sales of equity securities by us during the year ended December 31, 2021 that were not previously disclosed in our filings with the SEC.

Performance Graph

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information required under this item.

Item 6. [Reserved]

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

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. This discussion and other parts of this Form 10-K contain forward-looking statements that involve risks and uncertainties, such as statements of our plans, objectives, expectations and intentions. Our actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section of this Form 10-K entitled "Risk Factors."

Overview

We are a clinical-stage oncology company developing transformative treatments designed to halt the progression of life-threatening diseases, including cancer and fibrosis.

Our lead product candidate, batiraxcept (formerly AVB-500), is an ultrahigh-affinity, decoy protein that targets the GAS6-AXL signaling pathway. By capturing serum GAS6, batiraxcept starves the AXL pathway of its signal, potentially halting the biological programming that promotes disease progression. AXL receptor signaling plays an important role in multiple types of malignancies by promoting metastasis, cancer cell survival, resistance to treatments, and immune suppression.

Our current development program benefits from the availability of a proprietary serum-based biomarker that has accelerated batiraxcept drug development by allowing us to select a pharmacologically active dose and may potentially identify the cancer patients that have the best chance of responding to batiraxcept.

In our completed Phase 1 clinical trial in healthy volunteers with our lead product candidate, batiraxcept, we have demonstrated proof of mechanism for batiraxcept in neutralizing GAS6. Importantly, batiraxcept had a favorable safety profile preclinically and in the first in human trial and Phase 1b clinical trial in cancer patients.

In August 2018, the FDA designated as a Fast Track development program the investigation of our lead development candidate, batiraxcept, for platinum-resistant recurrent ovarian cancer.

In December 2018, we initiated our Phase 1b clinical trial of batiraxcept combined with standard of care therapies in patients with PROC, for which we reported results in July 2020.

In April 2020, we entered into a license and collaboration agreement with WuXi, the objective of which is to identify and develop novel high-affinity bispecific antibodies against CCN2, also known as CTGF, implicated in cancer and fibrosis and identified from a similar target discovery screen that identified the significance of the AXL/GAS6 pathway in cancer. The goal is to generate a best-in-class therapeutic targeting desmoplasia and tumor growth for initial investigation in the clinic in 2023.

In November 2020, we entered into 3D Medicines Agreement, whereby we granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance, for the diagnosis, treatment or prevention of human oncological diseases, in the Territory.

During the fourth quarter of 2020, we initiated our Phase 1b portion of the Phase 1b/2 trial of batiraxcept in ccRCC and we dosed our first patient in the trial in March 2021.

During the first quarter 2021, we initiated our registrational Phase 3 trial of batiraxcept in PROC and we dosed our first patient in the trial in April 2021.This global, randomized, double-blind, placebo-controlled adaptive trial is designed to evaluate efficacy and safety of batiraxcept at a dose of 15 mg/kg in combination with PAC versus PAC alone. As noted previously, we have experienced delays in patient enrollment due to the COVID-19 pandemic.

In May 2021, we announced expansion of batiraxcept development programs into first line pancreatic adenocarcinoma ("PA") with the goal of initiating the trial by end of 2021. We dosed our first patient in August 2021.

In June 2021, we announced positive initial safety, pharmacokinetic, and pharmacodynamic results from the batiraxcept Phase 1b portion of the Phase 1b/2 clinical trial in ccRCC.

In October 2021, the EMA granted orphan drug designation for batiraxcept for the treatment of ovarian cancer, following a recommendation from the Committee for Orphan Medicinal Products.

In November 2021, we announced positive preliminary data from our Phase 1b trial evaluating batiraxcept in combination with cabozantinib for treatment of ccRCC.

In March 2022, we announced updated positive data and new biomarker data from our Phase 1b trial of batiraxcept in ccRCC.

As we advance our clinical programs, we are in close contact with our CROs and clinical sites and are continually assessing the impact of COVID-19 on our planned trials and current timelines and costs. We have experienced delays in patient enrollment due to the COVID-19 pandemic. To date, we are on track to meet all of our recently announced clinical milestones. If the COVID-19 pandemic continues and persists for an extended period of time or increases in severity, we could experience significant disruptions to our clinical development timelines and, if we experience delays in patient enrollment and deems it necessary or advisable to improve patient recruitment by, among other things, opening additional clinical sites, we could incur increased clinical program expenses. Any such disruptions or delays would, and any such increased clinical program expenses could, adversely affect our business, financial condition, results of operations and growth prospects.

Recent Clinical Developments

In January 2022, we announced that we had dosed the first patient in the Phase 2 portion of the Phase 1b/2 study of batiraxcept in combination with cabozantinib for treatment of ccRCC.

In January 2022, we entered into an investment agreement (the "Investment Agreement") with Eshelman Ventures, LLC and, solely for purposes of Article IV and Article V of the Investment Agreement, Dr.. Eshelman relating to the issuance of a pre-funded warrant to purchase up to 4,545,455 shares of our common stock, par value $0.0001 per share, at a price of $2.20 per share, which was the consolidated closing bid price of our common stock on Nasdaq on December 31, 2021, for an aggregate purchase price of $10 million. The closing of the transaction occurred on January 5, 2022. Pursuant to the terms of the Investment Agreement, we were required to file a registration statement registering the shares of common stock underlying the pre-funded warrant. The registration statement was filed on January 5, 2022 and declared effective by the SEC on January 18, 2022.

In March 2022, we announced updated safety and clinical activity data from the 26 patients from the Phase Ib trial evaluating batiraxcept in combination with cabozantinib for treatment of ccRCC. We also announced updated clinical activity for 13 patients in a trial evaluating batiraxcept in combination with gemcitabine and nab-paclitaxel in patients with advanced or metastatic pancreatic adenocarcinoma eligible to receive gemcitabine and nab-paclitaxel as first-line treatment.

Recent Financial Developments

On March 31, 2022, we closed a registered direct offering of our common stock with a single healthcare-focused institutional investor and Eshelman Ventures, LLC, pursuant to which we issued 3,185,216 shares of common stock, 1,665,025 pre-funded warrants and common stock warrants to purchase up to 4,850,241 shares of common stock in a registered direct offering priced at-the-market under Nasdaq rules. The purchase price per share and accompanying common stock warrant was $2.005 for the institutional investor and $2.325 for Eshelman Ventures, LLC. The purchase price per pre-funded warrant and accompanying common stock warrant was $2.004 for the institutional investor. The net proceeds from the offering was $9.3 million, after deducting underwriting discounts, commission and offering expenses. The common stock warrants issued to the institutional investor are exercisable immediately, will expire five years from the exercisable date and will have an exercise price of $1.88 per share. The common stock warrants issued to Eshelman Ventures, LLC will be exercisable upon the approval by our stockholders of the exercise of previously issued securities, will expire five years following the exercise date and will have an exercise price of $2.20 per share. We could receive additional gross proceeds of $9.4 million, if the warrants are fully exercised.

Important Note

This Management's Discussion and Analysis of Financial Condition and Results of Operations includes a discussion of our operations for the years ended December 31, 2021 and December 31, 2020.

References in this report to "we," "us," "our" and similar first-person expressions refer to Aravive, Inc. (formerly known as Versartis, Inc.) and its subsidiaries, including Private Aravive. References to "Versartis, Inc." or "Private Aravive" refer to those respective companies prior to the completion of their merger in October 2018.

Financial overview

Revenue

To date, we have not generated any revenue from commercial sales of any of our product candidates. However, for the years ended December 31, 2021 and 2020, we generated approximately $7.4 million and $5.7 million from the 3D Medicine Agreement, which represents a portion of initial signing and milestone payments received from 3D Medicines that is recognized at the time of the receipt and a portion of the payments that is deferred and recognized over the PROC trial period.

In the future, we may generate revenue from a variety of sources, including product sales if we develop products which are approved for sale, license fees, milestones, research and development and royalty payments in connection with strategic collaborations or government contracts, or licenses of our intellectual property.

Research and development expenses

We recognize both internal and external research and development expenses as incurred. Our external research and development expenses consist primarily of:

- the cost of acquiring and manufacturing clinical trial and other materials, including expenses incurred under agreements with contract manufacturing organizations;
- expenses incurred under agreements with contract research organizations, investigative sites, and consultants that conduct our clinical trials;
- other costs associated with development activities, including additional studies; and

Internal research and development costs consist primarily of salaries and related fringe benefit costs for our employees (such as workers' compensation and health insurance premiums), stock-based compensation charges and travel costs.

General and administrative expenses

General and administrative expenses consist principally of personnel-related costs, professional fees for legal, consulting, audit and tax services, rent and other general operating expenses not included in research and development.

Other income (expense), net

Other income (expense), net is primarily comprised of sublease income for our 1020 Marsh Facility lease and gains and losses on foreign currency transactions related to third party contracts with foreign-based contract manufacturing organizations.

Results of operations

Comparison of the years ended December 31, 2021 and 2020

The following table summarizes our net loss during the periods indicated (in thousands, except percentages):

	Year Ended December 31,		Increase/ (Decrease)	
	2021	2020		
Revenue:				
Collaboration revenue	$ 7,442	$ 5,685	$ 1,757	31%
Operating expenses:				
Research and development	37,541	17,620	19,921	113%
General and administrative	10,550	13,065	(2,515)	-19%
Loss on impairment of long-lived assets	—	5,784	(5,784)	
Total operating expenses	48,091	36,469	11,622	32%
Loss from operations	(40,649)	(30,784)	9,865	-32%
Interest income	37	255	(218)	-85%
Other income (expense), net	1,461	(14)	1,475	(1)
Net loss	$ (39,151)	$ (30,543)	$ 8,608	-28%

(1) Not meaningful.

Collaboration revenue

In November 2020, we entered into the 3D Medicines Agreement. Collaboration revenue was approximately $7.4 million and $5.7 million for the years ended December 31, 2021 and 2020, respectively.

Research and development expense

Research and development expense increased by $19.9 million, or 113%, to $37.5 million in 2021 from $17.6 million for the same period in 2020. The increase was primarily due to the continued progress of our clinical programs, including our Phase 3 trial of batiraxcept in PROC, our Phase 1b/2 trial of batiraxcept in ccRCC, and our Phase 1 trial of batiraxcept in pancreatic cancer. The increase in research and development expense was also driven by an increase in our compensation expense as we further built out research and development teams to manage our ongoing clinical trials. The initiation and advancement of our Phase 3 trial of batiraxcept in PROC is the most significant driver to the increase in expense in 2021 when compared to the same period in 2020. There were also increased manufacturing activities during 2021 due to the initiation of the Phase 3 PROC trial.

General and administrative expense

General and administrative expense decreased by $2.5 million, or 19%, to $10.6 million in 2021 from $13.1 million for the same period in 2020. The decrease was primarily driven by a lower stock-based compensation expense along with reduced rent expense, legal and consulting fees.

Loss on impairment of long-lived assets

We incurred non-cash charges for impairment of our long-lived assets of $5.8 million for 2020 related to our former sublease tenant's inability to pay future sublease rental payments as compared to no charges in 2021.

Other income (expense), net

Other income, increased by approximately $1.5 million, to approximately $1.5 million other income net in 2021 from $14 thousand of other expense for the same period in 2020. The increase relates our sublease income received from our new Subtenant with no write-down incurred in 2021 as compared to the failure to receive sublease income in 2020 from our prior sublease tenant, which was offset by the write-down of $1.4 million related to our sublease receivable balance and previously capitalized commission charges due to the default in 2020 and 2021 by the prior sublease tenant under its sublease with us.

Liquidity and Capital Resources

Since our inception and through December 31, 2021, we have financed our operations through private placements of our equity securities, public offerings of our common stock, debt financing, CPRIT grant proceeds, sales of common stock through our at-the-market facility as well as upfront payments received from license agreements. At December 31, 2021, we had an accumulated deficit of approximately $539.8 million and working capital of $44.8 million, primarily as a result of research and development and general and administrative expenses. At December 31, 2021, we had cash and cash equivalents of approximately $59.4 million, a majority of which is invested in money market funds at several highly rated financial institutions.

During 2020 and 2021, our primary sources of funding have been grant revenue from our CRIT Grant, revenue from 3D Medicines and proceeds from the sale of our common stock, par value $0.0001 per share. In March 2020, we received approximately $1.6 million of additional funding from our CPRIT Grant related to a receivable balance recorded at December 31, 2019. In November 2020, June 2021 and August 2021, we received $12 million, $6 million and $3 million, respectively, in upfront and milestone payments from 3D Medicines pursuant to the 3D Medicines Agreement with them. On February 18, 2021, we received approximately $21 million from the purchase by Eshelman Ventures of 2,875,000 shares of our common stock. In September 2020, we filed a shelf registration statement on Form S-3 with the SEC which was declared effective by the SEC on November 20, 2020. On September 4, 2020, we entered into an equity distribution agreement (the "Equity Distribution Agreement"), with Piper Sandler and Cantor Fitzgerald, to sell shares of our common stock, par value $0.0001 per share, from time to time, through an “at the market offering” program having an aggregate offering price of up to $60,000,000 through which Piper Sandler and Cantor Fitzgerald will act as sales agents. During the year ended December 31, 2021, we sold 1,432,627 shares of common stock for net proceeds of $9.8 million under the Equity Distribution Agreement and subsequent to December 31, 2021 through March 15, 2022, we sold 54,763 shares of common stock for net proceeds of $0.1 million under the Equity Distribution Agreement. On January 5, 2022, we received approximately $10.0 million from the purchase by Eshelman Ventures, LLC of pre-funded warrants to purchase up to 4,545,455 shares of our common stock. In March 2022, we received approximately $9.3 million in net proceeds, in the aggregate, from the purchase by Eshelman Ventures, LLC and a single healthcare-focused institutional investor of 3,185,216 shares of our common stock, 1,665,025 pre-funded warrants and warrants to purchase up to 4,850,241 shares of our common stock in a registered direct offering.

As of December 31, 2021, we had cash and cash equivalents of approximately $59.4 million, which does not include approximately $19.3 million received subsequent to year end from the investments made by Eshelman Ventures and a single healthcare-focused institutional investor. We believe that our existing cash and cash equivalents will be sufficient to sustain operations into the first quarter of 2023 and that we will need to obtain additional financing in order to advance our clinical development program to later stages of development, build out our pipeline and fund operations for the foreseeable future and we will continue to seek funds through equity or debt financings, collaborative or other arrangements with corporate sources, or through other sources of financing. These factors raised substantial doubt about our ability to continue as a going concern. The consolidated financial statements included in this annual report do not include any adjustments relating to the recoverability of the recorded assets or the classification of liabilities that may be necessary should we be unable to continue as a going concern. Although management has been successful in raising capital in the past, there can be no assurance that we will be successful or that any needed financing will be available in the future at terms acceptable to us. Our failure to raise capital as and when needed could have a negative impact on our financial condition and our ability to pursue our business strategies. We anticipate that we will need to raise substantial additional capital, the requirements of which will depend on many factors, including:

- the rate of progress and cost of our clinical studies;
- the timing of, and costs involved in, seeking and obtaining approvals from the FDA and other regulatory authorities;
- the cost of preparing to manufacture on a larger scale;
- the costs of commercialization activities if any future product candidate is approved, including product sales, marketing, manufacturing and distribution;
- the degree and rate of market acceptance of any products launched by us or future partners;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- our ability to enter into additional collaboration, licensing, commercialization or other arrangements and the terms and timing of such arrangements; and
- the emergence of competing technologies or other adverse market developments.

If we are unable to raise additional funds when needed, we may be required to delay, reduce, or terminate some or all of our development programs and clinical trials. We may also be required to sell or license to others technologies or clinical product candidates or programs that we would prefer to develop and commercialize ourselves.

Cash flows

The following table sets forth the primary sources and uses of cash and cash equivalents for each of the periods presented below:

	Year Ended December 31,	
	2021	2020
	(In thousands)	
Net cash (used in) provided by:		
Operating activities	$ (32,177)	$ (12,169)
Financing activities	31,061	7,583
Net decrease in cash and cash equivalents	$ (1,116)	$ (4,586)

Cash used in operating activities

Net cash used in operating activities was $32.2 million and $12.2 million during the years ended December 31, 2021 and 2020, respectively, which was primarily due to the use of funds in our operations related to the development of batiraxcept, our product candidate. Cash used in operating activities in 2021 increased compared to the year ended December 31, 2020 due primarily to the ramp up in our Phase 3 trial of batiraxcept in PROC along with continuing costs related to our trial of our second oncology indication, ccRCC and our new third oncology indication, pancreatic adenocarcinoma.

Cash provided by investing activities

Net cash from investing activities during the years ended December 31, 2021 and 2020 was zero.

Cash provided by financing activities

Net cash provided by financing activities was $31.1 million and $7.6 million during the years ended December 31, 2021 and 2020, respectively. Financing activities related to the year ended December 31, 2021 included a registered direct offering with proceeds of $20.9 million along with at the market offering proceeds of $9.8 million. Financing activities related to the year ended December 31, 2020 included a private placement offering with proceeds of $5.0 million in April 2020 along with at the market offering proceeds of $2.3 million.

Critical Accounting Policies, Significant Judgments and Use of Estimates

The Management's Discussion and Analysis of Financial Condition and Results of Operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America, ("U.S. GAAP"). The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, and expenses. On an ongoing basis, we evaluate our critical accounting policies and estimates. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable in the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions and conditions. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

Collaboration Revenue

Collaboration revenue for 2021 and 2020 has been generated through our collaboration and license agreement which is within the scope of ASC 606. Under ASC 606, we recognize revenue when our customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of ASC 606, we perform the following five steps:

(i) identify the contract(s) with a customer;

(ii) identify the performance obligations in the contract;

(iii) determine the transaction price;

(iv) allocate the transaction price to the performance obligations in the contract; and

(v) recognize revenue when (or as) the entity satisfies a performance obligation.

We only apply the five-step model to contracts when it is probable that the entity will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, we assess the goods or services promised within each contract and determine those that are performance obligations, and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

Our collaboration and license agreement contains multiple elements including (i) intellectual property licenses and (ii) research and development services. Consideration received under these arrangements may include upfront payments, research and development funding, cost reimbursements, milestone payments, payments for product sales and royalty payments. In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under the agreement, we implement the five-step model noted above. As part of the accounting for the arrangement, we must develop assumptions that require judgment to determine whether the individual promises should be accounted for as separate performance obligations or as a combined performance obligation, and to determine the stand-alone selling price for each performance obligation identified in the contract. A deliverable represents a separate performance obligation if both of the following criteria are met: (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer, and (ii) the entity's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract. We use key assumptions to determine the stand-alone selling price, which may include forecasted revenues, development timelines, estimated costs to be incurred, discount rates, and probabilities of technical and regulatory success.

Research and Development Expense

Research and development costs are expensed as incurred. Research and development expense includes payroll and personnel expenses; consulting costs; external contract research and development expenses; and allocated overhead, including rent and utilities, and relate to both company-sponsored programs as well as costs incurred pursuant to reimbursement arrangements. Nonrefundable advance payments for goods or services that will be used or rendered for future research and development activities are deferred and capitalized and recognized as an expense as the goods are delivered or the related services are performed.

As part of the process of preparing our consolidated financial statements, we are required to estimate our accrued research and development expenses. This process involves reviewing contracts and purchase orders, reviewing the terms of our license agreements, communicating with our applicable personnel to identify services that have been performed on our behalf, and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of actual cost. The majority of our service providers invoice us monthly in arrears for services performed. We make estimates of our accrued expenses as of each consolidated balance sheet date in our consolidated financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments if necessary. Examples of estimated accrued research and development expenses include fees to:

- contract manufacturers in connection with the production of clinical trial materials;
- contract research organizations and other service providers in connection with clinical studies;

- investigative sites in connection with clinical studies;
- vendors in connection with preclinical development activities; and
- professional service fees for consulting and related services.

We base our expenses related to clinical studies on our estimates of the services received and efforts expended pursuant to contracts with multiple research institutions and contract research organizations that conduct and manage clinical studies on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract, and may result in uneven payment flows and expense recognition. Payments under some of these contracts depend on factors such as the successful enrollment of patients and the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual accordingly. Our understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in our reporting changes in estimates in any particular period. To date, there have been no material differences from our estimates to the amount actually incurred. However, due to the nature of these estimates, we cannot assure you that we will not make changes to our estimates in the future as we become aware of additional information about the status or conduct of our clinical studies or other research activity.

Right-of-Use Lease Accounting

The most significant estimates used by management in accounting for right-of-use leases and the impact of these estimates are as follows:

- Lease term - We estimate our lease term and lease obligation based upon our signed commitment to make the lease payments arising from our leases. We consider any lease extensions and if we determine those extensions are reasonably certain that we will exercise that option those extensions, if any, are included in the lease term.
- Incremental borrowing rate - Our leases do not provide an implicit rate, we use an estimated incremental borrowing rate based on the information available at the lease inception in determining the present value of lease payments.

Stock-based Compensation Expense

For the years ended December 31, 2021 and 2020, stock-based compensation expense was $2.3 million and $2.0 million, respectively. As of December 31, 2021, we had approximately $3.6 million of total unrecognized compensation expense, which we expect to recognize over a weighted-average period of approximately 2.6 years. The intrinsic value of all outstanding stock options as of December 31, 2021 was approximately $1.6 million, of which all related to vested options. We expect to continue to grant equity incentive awards in the future as we seek to retain our existing employees.

Stock-based compensation costs related to stock options granted to employees are measured at the date of grant and to the options assumed in connection with the Merger are measured at the date of the Merger based on the estimated fair value of the award, net of estimated forfeitures. We estimate the grant date fair value, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. The grant date fair value of stock-based awards is recognized on a straight-line basis over the requisite service period, which is generally the vesting period of the award. Stock options we grant to employees generally vest over four years.

The Black-Scholes option-pricing model requires the use of highly subjective assumptions to estimate the fair value of stock-based awards. If we had made different assumptions, our stock-based compensation expense, net loss and net loss per share of common stock could have been significantly different. These assumptions include:

- Expected volatility: The expected volatility is based on the historical volatility of our common stock over the most recent period commensurate with the estimated expected term of our stock options.
- Expected term: We do not believe we are able to rely on our historical exercise and post-vesting termination activity to provide accurate data for estimating the expected term for use in estimating the fair value-based measurement of our options. Therefore, we have opted to use the "simplified method" for estimating the expected term of options.
- Risk-free rate: The risk-free interest rate is based on the yields of U.S. Treasury securities with maturities similar to the expected time to liquidity.
- Expected dividend yield: We have never declared or paid any cash dividends and do not presently plan to pay cash dividends in the foreseeable future. Consequently, we used an expected dividend yield of zero.

See Note 9 to our audited consolidated financial statements included elsewhere in this annual report on Form 10-K for information concerning certain of the specific assumptions used in applying the Black-Scholes option-pricing model to determine the estimated fair value of employee stock options. In addition to the assumptions used in the Black-Scholes option-pricing model, we must also estimate a forfeiture rate to calculate the stock-based compensation expense for our awards. We will continue to use judgment in evaluating the expected volatility, expected terms, and forfeiture rates utilized for our stock-based compensation expense calculations on a prospective basis.

Income Taxes

We file U.S. federal income tax returns, Texas, California and other various state tax returns. To date, we have not been audited by the Internal Revenue Service or any state income tax authority; however, all tax years remain open for examination by federal and state tax authorities. We use the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. We assess the likelihood that the resulting deferred tax assets will be realized. A valuation allowance is provided when it is deemed more likely than not that some portion or all of a deferred tax asset will not be realized.

As of December 31, 2021, our total gross deferred tax assets were $23.6 million. Due to our lack of earnings history and uncertainties surrounding our ability to generate future taxable income, the net deferred tax assets have been fully offset by a valuation allowance. The deferred tax assets were primarily comprised of federal and state tax net operating losses and tax credit carryforwards. Utilization of net operating losses and tax credit carryforwards may be limited by the “ownership change” rules, as defined in Section 382 of the Internal Revenue Code (any such limitation, a “Section 382 limitation”). Similar rules may apply under state tax laws. We have performed an analysis to determine whether an “ownership change” occurred from inception up to the Aravive Biologics acquisition date. Based on this analysis during 2018, management determined that both Versartis, Inc. and Aravive Biologics did experience ownership changes, which resulted in a significant impairment of the net operating losses and credit carryforwards. During the years ended December 31, 2021 and 2020, no additional ownership changes were noted.

Recent Accounting Pronouncements

Recently issued accounting pronouncements that we have adopted or are currently evaluating are described in detail within “Note 2—Summary of Significant Accounting Policies” to the accompanying consolidated financial statements included elsewhere in this Annual Report on Form 10K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information required under this item.

Item 8. Financial Statements and Supplementary Data.

The following consolidated financial statements of the registrant, related notes and reports of independent registered public accounting firms are set forth beginning on page F-1 of this report.

Report of Independent Registered Public Accounting Firm (BDO USA, LLP; Raleigh, NC; PCAOB ID #243) F-2

Consolidated Balance Sheets F-4

Consolidated Statements of Operations F-5

Consolidated Statements of Stockholders' Equity F-6

Consolidated Statements of Cash Flows F-7

Notes to the Consolidated Financial Statements F-8

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None

Item 9A. Controls and Procedures.

(a) Evaluation of Disclosure Controls and Procedures

An evaluation as of December 31, 2021 was carried out under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our "disclosure controls and procedures," which are defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act), as controls and other procedures of a company that are designed to ensure that the information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Based upon that evaluation, our 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.

(b) Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) of the Exchange Act. Our internal control system is designed to provide reasonable assurance regarding the preparation and fair presentation of financial statements for external purposes in accordance with generally accepted accounting principles. All internal control systems, no matter how well designed, have inherent limitations and can provide only reasonable assurance that the objectives of the internal control system are met.

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, based on criteria established by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in its 2013 Internal Control-Integrated Framework. Based on our evaluation, we concluded that our internal control over financial reporting was effective as of December 31, 2021.

As of December 31, 2021, we are a non-accelerated filer, our independent registered accounting firm is not required to issue an attestation report on our internal control over financial reporting**.**

(c) Changes in Internal Control over Financial Reporting

Our management, including our Chief Executive Officer and Chief Financial Officer, has evaluated any changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2021, and has concluded that there was no change during such period that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspection

Not Applicable

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

BOARD OF DIRECTORS AND EXECUTIVE OFFICERS OF THE COMPANY

The following table sets forth information concerning our directors and executive officers, including their ages as of March 21, 2022. There are no family relationships among any of our directors or executive officers.

Name	Age	Position(s)
Fredric N. Eshelman, Pharm. D.(1)	73	Executive Chairman of the Board of Directors
Gail McIntyre, Ph.D.(2)	59	President, Chief Executive Officer and Director
Vinay Shah (3)	59	Chief Financial Officer
Leonard Scott Dove, Ph.D. (4)	49	Chief Operating Officer
Amato Giaccia, Ph.D.	63	Director
Eric Zhang	40	Director
John A. Hohnecker, M.D.	62	Director
Michael W. Rogers	62	Director
Peter T.C. Ho, M.D., Ph.D.	60	Director
Sigurd C. Kirk	55	Director

(1) Dr. Eshelman was appointed as our company's Executive Chairman on January 3, 2022 and has served as the non-executive Chairman of our Board since April 8, 2020.

(2) Dr. McIntyre was appointed President and Chief Executive Officer and director effective April 8, 2020. Dr. McIntyre served as our Chief Scientific Officer from February 12, 2019 until her appointment as Chief Executive Officer.

(3) Mr. Shah has served as our Chief Financial Officer since October 12, 2018.

(4) Dr. Dove has served as our Chief Operating Officer since March 21, 2022.

Fredric N. Eshelman, Pharm. D, Chairman of the Board of Directors

Dr. Eshelman was appointed the Executive Chairman of our company on January 3, 2022 and has served as the non-executive Chairman of the Board of Directors since April 8, 2020. Dr. Eshelman is the Founder of Eshelman Ventures, LLC, an investment company primarily interested in healthcare companies. Previously, he founded and served as Chairman and Chief Executive Officer of Pharmaceutical Product Development, Inc. (PPDI) prior to the sale of the company to private equity interests. After PPD, he served as founding chairman and was the largest shareholder of Furiex Pharmaceuticals, Inc. (FURX), a company which in-licensed and rapidly developed new medicines. Furiex was sold to Forest Laboratories Inc. (which was later acquired by Actavis) in 2014. His career has also included positions as SVP development and board member of the former Glaxo, Inc., as well as management positions with Beecham Laboratories and Boehringer Mannheim Pharmaceuticals. Dr. Eshelman is also a member of the Board of Directors of, Amplitude Healthcare Acquisition Corp. (Nasdaq: AMHC) and Eyenovia Inc. (Nasdaq:EYEN). He is currently chairman of several biotech companies and previously was chairman of The Medicines Company (MDCO) and was on the board of Bausch Health (BHC) G1 Therapeutics, Inc. (Nasdaq: GTHX). Dr. Eshelman has served on the executive committee of the Medical Foundation of North Carolina and was appointed by the North Carolina General Assembly to serve on the Board of Governors for the state's multi-campus university system (chair of audit committee), as well as the North Carolina Biotechnology Center. In addition, he chairs the board of visitors for the School of Pharmacy at University of North Carolina at Charlotte (UNC-CH). The school was named the UNC Eshelman School of Pharmacy in recognition of his many contributions to the school and the profession.

He has received many awards including the Davie and Distinguished Service Awards from UNC, outstanding alumnus from both the UNC and University of Cincinnati schools of pharmacy, Life Science Leadership Award (CED) and the North Carolina Biotech Hall of Fame. Dr. Eshelman received the doctor of pharmacy from the University of Cincinnati, completed a residency at Cincinnati General Hospital, and received a BS Pharm from UNC-CH. He completed the OPM program at Harvard Business School. Dr. Eshelman also received an honorary doctor of science from UNC-CH.

We believe Dr. Eshelman is qualified to serve as a member of our Board of Directors based on his experience in the life sciences, biotechnology and pharmaceutical industries and for his knowledge of corporate development matters.

Gail McIntyre, Ph.D., Chief Executive Officer and Director

Dr. McIntyre has served as a member of the Board of Directors and as our President and Chief Executive Officer since April 8, 2020 and from February 2019 until her appointment as our Chief Executive Officer, as our Chief Scientific Officer. Dr. McIntyre also served as our Senior Vice President of Research and Development from the Merger until February 2019 and served as Aravive Biologics' Senior Vice President of Research and Development from January 2017 to October 2018 and a consultant to Aravive Biologics from August 2016 until January 2017. Having brought multiple drugs to market, Dr. McIntyre has more than 20 years of experience in drug development, strategic business development, licensing and M&A activities. Dr. McIntyre has served as a principal at IntelliDev Consulting, LLC providing consulting services to several biotechnology companies for three years, while also serving as VP of Development for Meryx, Inc. from January 2014 until January 2016. Prior to that, Dr. McIntyre held the position of senior vice president of research at Furiex Pharmaceuticals, Inc. and previously served as head of Pharmaceutical Product Development LLC's (PPD) compound partnering business. At both Furiex and PPD, she strategized and managed all preclinical and clinical activities for drug development programs and was responsible for identification of new partnering opportunities and technical due diligence for both in-licensing opportunities and new business acquisitions. At PPD, she led the partnering and the in-licensing of Alogliptin from Syrrx, Inc. at preIND stage and the licensing to Takeda at Phase 2. She was instrumental to the licensing of Dapoxetine to what is currently Johnson & Johnson and then The Menarini Group. She played a pivotal role in the $1.1 billion acquisition of Allergan in 2014 and successfully negotiated with CSS on scheduling for Viberzi, in addition to driving all aspects of development. Dr. McIntyre has authored more than 30 regulatory submissions and is a board-certified toxicologist. Her experience covers multiple therapeutic areas including oncology (including immune-oncology), infectious diseases, central nervous system, gastrointestinal, and metabolic/endocrine as well as various therapies including small drugs, treatment vaccines, antibodies, immunoconjugates and peptide mimetics. Dr. McIntyre is also board certified in Clinical Pathology

(hematology and clinical chemistry) by the American Society of Clinical Pathology. Dr. McIntyre received her B.A. in Biology from Merrimack College. She earned M.S. and Ph.D. degrees in Biochemistry and Biophysics from the University of North Carolina at Chapel Hill.

We believe that Dr. McIntyre is able to make valuable contributions to the Board of Directors due to her clinical and leadership experience in the healthcare and pharmaceutical industries.

Vinay Shah, Chief Financial Officer

Mr. Shah has served as our Chief Financial Officer since the Merger was completed on October 12, 2018. Mr. Shah also served as the Chief Financial Officer of Aravive Biologics since 2010, initially as a consultant and from 2017 as an employee. Mr. Shah brings more than 18 years of financial management experience in the medical device and biopharmaceutical industries to our company. From 2008 until 2016, he served in various positions at Pacira Pharmaceuticals Inc., a specialty pharmaceutical company, including Executive Director of Finance and Executive Director of Strategy Analytics, initially as a consultant and since 2010 as an employee. Before Pacira Pharmaceuticals Inc., Mr. Shah worked for Cardinal Health's medical device group in various finance management positions. The group was subsequently consolidated and spun off as CareFusion and then sold to Becton, Dickinson and Company. His prior work experience includes positions at Pricewaterhouse Coopers LLP and KPMG in India and the Middle East. Mr. Shah received a Bachelor of Commerce degree from Ranchi University in India. He is a Chartered Accountant from the Institute of Chartered Accountants in India and has an MBA from W.P. Carey School of Business at Arizona State University.

Leonard Scott Dove, Ph.D., Chief Operating Officer

Dr. Dove has served as our Chief Operating Officer since March 21, 2022. Previously, from November 2017 until March 2022, Dr. Dove served as Senior Vice President and General Manager of PPD, Inc. ("PPD"), a Thermo Fisher Scientific company (NYSE: TMO), where he provided strategic direction and oversight of PPD's Early Development Services business unit. In this role, Dr. Dove was responsible for the organizational design and executive management of early phase CRO operations. PPD is a leading global provider of clinical research services to the biopharma and biotech industry. Prior to joining PPD, from August 2015 to November 2017, Dr. Dove was an Executive Director of Clinical Development with Allergan, Inc. ("Allergan") in a contract capacity serving as global clinical development leader for Viberzi®/Truberzi® (eluxadoline). At Allergan, he negotiated marketing approvals, labeling, and post-marketing requirements for eluxadoline as a treatment for irritable bowel syndrome, while overseeing the development and operational execution of its label expansion and lifecycle management clinical strategy. Dr. Dove previously oversaw the development of eluxadoline as program leader at Furiex Pharmaceuticals, Inc., managing the program through successful NDA submission until the acquisition of Furiex by Actavis plc (now Allergan). Dr. Dove received his B.S. in biochemistry and a doctorate in pharmacology from Texas A&M University.

Amato Giaccia, Ph.D., Director

Dr. Giaccia has served as a member of the board of directors since the Merger was completed on October 12, 2018. Prior to the closing date of the Merger, he also served as a member of the board of directors of Private Aravive from August 2010 to October 2018 and as Acting Chief Scientific Officer of Private Aravive from January 2017 until the Merger was completed on October 12, 2018. Dr. Giaccia also served as Professor of Radiation Oncology, Associate Chair for Research & Director of the Division of Radiation & Cancer Biology in the Department of Radiation Oncology at Stanford University School of Medicine, a position he has held since 2011 and has been a Director of Oxford Institute of Radiation Oncology since January 2019. He is also the Associate Director for Basic Science and leader of the Radiation Biology Program in Stanford Cancer Institute. He has also served as the Director of the Cancer Biology Interdisciplinary Graduate Program and is currently the "Jack, Lulu and Sam Willson Professor in Cancer Biology" in the Stanford University School of Medicine. He received his Ph.D. from the University of Pennsylvania.

We believe that Dr. Giaccia is able to make valuable contributions to the board of directors due to his extensive scientific and medical knowledge and experience and his familiarity with Aravive's technology as the leader of the laboratory in which it originated.

Eric Zhang, Director

Mr. Zhang has served as a member of the board of directors since the Merger was completed on October 12, 2018. Prior to the closing date of the Merger, he also served as a member of the board of directors of Aravive Biologics from June 2016 to October 2018. Mr. Zhang is the Managing Partner of New Era Technologies Management Ltd., a company he founded in 2016, which is a multi-strategy investor in biotechnology and applied physical sciences companies. From 2013 until 2016, when he founded New Era Technologies Management Ltd, Mr. Zhang was the manager of his family office investments. Mr. Zhang joined J.P. Morgan's China Investment Banking team in Hong Kong in 2006. In the subsequent seven years, Mr. Zhang worked for Macquarie Capital and Barclays Capital in Hong Kong, responsible for covering clients in the healthcare and technology sectors in the Greater China region. Mr. Zhang received a Bachelor of Commerce and BA in Economics from Queen's University in Kingston, Canada.

We believe that Mr. Zhang is able to make valuable contributions to the board of directors due to his extensive experience as an investor in and director of our company and other biotechnology companies.

John A. Hohneker, M.D., Director

Dr. Hohneker has served as a member of the Board of Directors since May 12, 2021. Dr. Hohneker has 30 years of drug development and leadership experience within the biotech and pharmaceutical industry. Dr. Hohneker served as President and Chief Executive Officer of Anokion SA, a biotechnology company, from January 2018 to January 2021. Prior to joining Anokion SA, Dr. Hohneker was President of Research and Development at FORMA Therapeutics Inc., a biotechnology company, from August 2015 to January 2018. From 2001 to 2015, Dr. Hohneker held roles of increasing responsibility at Novartis AG, most recently as Senior Vice President and Global Head of Development, Immunology and Dermatology. Prior to joining Novartis, he held positions of increasing responsibility at Glaxo Wellcome and its legacy company, Burroughs Wellcome.

Since January 2021, Dr. Hohneker has served on the Board of Directors of Evelo Biosciences, Inc., a publicly-traded company. From January to November 2017, he served on the Board of Directors of Dimension Therapeutics Inc., a biotechnology company, until it was acquired by Ultragenyx Pharmaceutical Inc. Dr. Hohneker received a bachelor's degree in chemistry from Gettysburg College and an M.D. from the University of Medicine and Dentistry of New Jersey at Rutgers Medical School. He completed his internship and residency in internal medicine and his fellowship in medical oncology, all at the University of North Carolina at Chapel Hill.

We believe Dr. Hohneker is qualified to serve as a member of our Board of Directors based on his experience in the pharmaceutical and biotech industries.

Michael Rogers, Director

Mr. Rogers has served as a member of the board of directors since September 15, 2020. Mr. Rogers most recently served as Chief Financial Officer at Aerpio Pharmaceuticals, Inc. (Nasdaq: ARPO) from November 2017 to October 15, 2019. Prior to Aerpio Pharmaceuticals, Inc., he served as Chief Financial Officer at Acorda Therapeutics, Inc. (Nasdaq: ACOR) from 2013 to 2016 and held executive and leadership positions at BG Medicine, Indevus Pharmaceuticals (acquired by Endo Pharmaceuticals), Advanced Health Corporation and Autoimmune. Mr. Rogers currently serves as a member of the Board of Directors for Akebia Therapeutics (Nasdaq Global Market: AKBA), with previous advisory experience at Keryx Biopharmaceuticals, Eyepoint Pharmaceuticals and Coronado Biosciences. Earlier in his career, Mr. Rogers was an investment banker at Lehman Brothers and PaineWebber, where he focused on life sciences companies. He earned his M.B.A. from the Darden School of Business at the University of Virginia and received his bachelor's degree from Union College.

We believe that Mr. Rogers is able to make valuable contributions to the board of directors due to his extensive public company experience as an officer and director of biotechnology companies.

Peter T. C. Ho, M.D., Ph.D., Director

Dr. Ho has served as a member of the Board of Directors since May 12, 2021. Dr. Ho has more than 25 years of biotechnology and pharmaceutical industry experience in numerous operational roles. Dr. Ho served as the Chief Medical Officer of Boston Pharmaceuticals, Inc. from 2018 until 2020. From September 2014 until 2017, Dr. Ho served in various roles at Epizyme, Inc., a commercial stage biopharmaceutical company, including as Executive Vice President and Chief Medical Officer from September 2015 until December 31, 2017 and Chief Development Officer from September 2014 to September 2015. Dr. Ho served as Chief Executive Officer of Metastagen Inc., a pharmaceutical preparation company that he co-founded, from February 2013 until September 2014, as President of BeiGene Ltd., a biopharmaceutical company based in Beijing, China that he co-founded, from October 2010 to December 2012, as Vice President of Oncology Development at Johnson & Johnson from September 2008 to September 2010 and, prior to that, as Senior Vice President of the Oncology Center of Excellence for Drug Development at GlaxoSmithKline. Dr. Ho currently serves on the Scientific Advisory Board of Accent Therapeutics, Inc. and is a Senior Scientific and Medical Advisor to Overland Pharmaceuticals (US) Inc., D3 Bio, Inc., based in Hong Kong, and M4K Pharma, based in Toronto, CA. Over his career, Dr. Ho has been directly responsible for the first-in-human dosing of 19 anticancer agents and has overseen the development of over 60 hematology and oncology compounds in all phases of clinical trials. His work has contributed to eleven NCE or biologics approvals to date: Gleevec®; Arranon®; Tykerb®; Promacta®; Votrient®; Synribo®; Tafinlar®; Mekinist®; Sylvant®; Rydap®, and Tazverik®.

Dr. Ho is currently an Adjunct Associate Professor in the Division of Chemical Biology and Medicinal Chemistry at the Eshelman School of Pharmacy, University of North Carolina. Dr. Ho received his M.D. and Ph.D. (pharmacology) degrees from Yale University and then completed a pediatrics residency at The Children's Hospital of Boston followed by clinical fellowships in pediatric hematology/oncology at the Dana-Farber Cancer Institute and in clinical oncology and regulatory sciences jointly through the U.S. FDA and the National Cancer Institute. He received his bachelor's degree in Biology at Johns Hopkins University.

We believe Dr. Ho is qualified to serve as a member of our Board of Directors based on his experience in the pharmaceutical and biopharmaceutical industries.

Sigurd C. Kirk, Director

Mr. Kirk has served as a member of the Board of Directors since May 12, 2021. Mr. Kirk is a senior corporate business development executive with more than 15 years of pharmaceutical experience in the areas of branded biopharmaceutical, medical device and generic products. From 2009 until its acquisition by AbbVie Inc. in May 2020, Mr. Kirk held various positions at Allergan plc. (formerly Actavis). From May 2012 until May 2020, Mr. Kirk

was Executive Vice President, Corporate Business Development at Allergan plc., where he was a member of the 12-person Executive Leadership Team. He was an integral member assessing development and commercial opportunities, leading due diligence, as well as negotiating and transacting key legal and financial terms. Mr. Kirk also served as Senior Vice President, Global Controller and Chief Accounting Officer for Barr Pharmaceuticals, Inc. from 2003 until 2009. Mr. Kirk started his career at Deloitte & Touche as an Audit Manager, earning his CPA certification. Mr. Kirk received his Bachelor of Business Administration degree from Pace University.

We believe Mr. Kirk is qualified to serve as a member of our Board of Directors based on his experience in the pharmaceutical and biopharmaceutical industries.

TERM AND NUMBER OF DIRECTORS

The board of directors currently consists of eight (8) directors and is divided into three classes. Each class serves for a term of three years, with the terms of office of the respective classes expiring in successive years. Directors in Class I (Dr. Eshelman and Sigurd Kirk) will stand for election at the 2024 meeting of stockholders, directors in Class II (Dr. Giaccia, Dr. Hohneker and Mr. Rogers) will stand for election at the 2025 Annual Meeting and directors in Class III (Dr. McIntyre, Dr. Ho and Mr. Zhang) will stand for election at the 2023 annual meeting of stockholders.

Vacancies on the board of directors may be filled only by persons elected by a majority of the remaining directors. A director elected by the board of directors to fill a vacancy in a class, including vacancies created by an increase in the number of directors, shall serve for the remainder of the full term of that class and until the director's successor is duly elected and qualified.

Information Regarding the Board of Directors and Corporate Governance

Independence of the Board of Directors

Our common stock is listed on Nasdaq. Under Nasdaq listing standards, independent directors must comprise a majority of a listed company's board of directors and all members of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee must be independent. Audit Committee members must also satisfy the independence criteria set forth in Rule 10A-3 under the Exchange Act and Compensation Committee members must also satisfy the independence criteria set forth in Rule 10C-1 under the Exchange Act. Under Nasdaq listing standards, a director will only qualify as an "independent director" if, in the opinion of that company's board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director.

In order to be considered to be independent for purposes of Rule 10A-3, a member of an Audit Committee of a listed company may not, other than in his or her capacity as a member of the Audit Committee, the board of directors, or any other board committee: (i) accept, directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries, or (ii) be an affiliated person of the listed company or any of its subsidiaries.

The board of directors undertook a review of the independence of the members of the board of directors and considered whether any director has a material relationship with our company that could compromise his or her ability to exercise independent judgment in carrying out his or her responsibilities. Based upon information requested from and provided by each director concerning their background, employment and affiliations, including family relationships, the board of directors has determined that all of our current directors, except Dr. Eshelman due to his position as Executive Chairman and Dr. McIntyre, due to her current position as President and Chief Executive Officer of our company, is "independent" as that term is defined under the rules of Nasdaq. As a result, Dr. Giaccia, Dr. Hohneker, Dr. Ho, Mr. Kirk, Mr. Rogers, and Mr. Zhang are deemed to be "independent" as that term is defined under the rules of Nasdaq.

In making these determinations, the board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances the board of directors deemed relevant in determining their independence, including the beneficial ownership of capital stock by each non-employee director, and the transactions involving them described in Item 13 of this Amendment "Certain Relationships and Related-Party Transactions, Director Independence."

INFORMATION REGARDING COMMITTEES OF THE BOARD OF DIRECTORS

The board of directors has the authority to appoint committees to perform certain management and administration functions. As disclosed above, the board of directors has established an Audit Committee, a Compensation Committee and Nominating and Corporate Governance Committee. The board of directors may establish other committees to facilitate the management of our company's business. The composition and functions of each committee are described below. Members serve on these committees until their resignation or until otherwise determined by the board of directors.

All of the committees comply with all applicable requirements of the Sarbanes-Oxley Act of 2002, Nasdaq, and SEC, rules and regulations as further described below. The charters for each of these committees are available on our website at www.aravive.com. Information contained on or accessible through our website is not a part of this Annual Report on Form 10-K and the inclusion of such website address in this Annual Report on Form 10-K is an inactive textual reference only.

Committees of the Board of Directors

The table set forth below shows the directors who are currently members or Chairman of each of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee. From time to time, the board of directors may also establish *ad hoc* committees to address particular matters.

Name	Audit	Compensation	Nominating and Corporate Governance
Gail McIntyre*			
Fredric N. Eshelman, Pharm. D.***			
Amato Giaccia, Ph.D.	X	X	X**
Michael W. Rogers	X**	X**	
Eric Zhang	X		
John A. Hohneker, M.D.		X	
Peter T. C. Ho, M.D., Ph.D.			X
Sigurd Kirk	X		

* Dr. McIntyre joined the board of directors effective April 8, 2020 as a Class III member. She is not a member of any of the committees of the board of directors.

** Committee Chairman

*** Dr. Eshelman serves as the Executive Chairman of the board of directors and is not a member of any committees.

Below is a description of each committee of the board of directors.

Audit Committee

Messrs. Rogers, Kirk, Zhang and Dr. Giaccia currently serve as members of the Audit Committee. The board of directors has determined that Messrs. Rogers, Kirk, Zhang and Dr. Giaccia are each "independent" in accordance with the Nasdaq Stock Market definition of independence. The board of directors has determined that each of Messrs. Rogers, Kirk, Zhang and Dr. Giaccia has the related financial management expertise within the meaning of the Nasdaq Stock Market rules, and that each of Messrs. Rogers, Kirk and Zhang are "financial experts" under the applicable rules and regulations of the SEC and Nasdaq.

The primary purpose of the Audit Committee is to act on behalf of the board of directors in fulfilling the board of directors' oversight responsibilities with respect to our corporate accounting and financial reporting processes, systems of internal control over financial reporting and audits of financial statements, as well as the quality and integrity of our financial statements and reports and the qualifications, independence and performance of the registered public accounting firm or firms engaged as our independent outside auditors for the purpose of preparing or issuing an audit report or performing audit services. Specific responsibilities of the Audit Committee include:

- evaluating the performance of and assessing the qualifications of the independent auditors;
- determining and approving the engagement of the independent auditors;
- determining whether to retain or terminate the existing independent auditors or to appoint and engage new independent auditors;
- reviewing and approving the retention of the independent auditors to perform any proposed permissible non-audit services;
- monitoring the rotation of partners of the independent auditors on our audit engagement team as required by law;
- reviewing and approving or rejecting transactions between us and any related persons;
- conferring with management and the independent auditors regarding the effectiveness of internal controls over financial reporting;
- establishing procedures, as required under applicable law, for the receipt, retention and treatment of complaints received by us regarding accounting, internal accounting controls or auditing matters and the confidential and anonymous submission by employees of concerns regarding questionable accounting or auditing matters; and
- meeting to review our annual audited financial statements and quarterly financial statements with management and the independent auditor.

The Audit Committee operates pursuant to a written charter adopted by the board of directors, which is available on our website at *www.aravive.com*. The charter describes in more detail the nature and scope of responsibilities of the Audit Committee.

Compensation Committee

Dr. Giaccia, Dr. Hohneker and Mr. Rogers currently serve as members of the Compensation Committee, each of whom the board of directors has determined is independent in accordance Rule 10C-1 under the Exchange Act and the Nasdaq definition of independence and that each is a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act.

The primary purpose of the Compensation Committee is to discharge the responsibilities of the board of directors to oversee compensation policies, plans and programs and to review and determine the compensation to be paid to the executive officers, directors and other senior management, as appropriate. Specific responsibilities of the Compensation Committee include:

- reviewing and approving, or recommending that the independent members of the board of directors approve, goals and objectives relevant to the compensation of executive officers, and evaluating performance in light of such goals and objectives, including reviewing and approving employment, severance, change in control provisions and other compensatory arrangements;
- reviewing and approving the compensation of the directors;
- overseeing the administration of equity incentive plans and approve grants and awards;
- reviewing and making recommendations to the board of directors regarding the adoption, amendment and termination of our equity incentive plans;
- assessing the independence of independent compensation consultants, legal counsel or other advisors to the committee, before retaining them;
- reviewing and discussing with management our disclosures regarding compensation for use in any annual reports on Form 10-K, registration statements or proxy statements, to the extent required by law or Nasdaq listing requirements;
- preparing and reviewing the Compensation Committee report on executive compensation included in our annual proxy statement, to the extent required by law and Nasdaq listing requirements;
- investigating any matter brought to the attention of the Compensation Committee within the scope of its duties, if in the judgment of the Compensation Committee, such investigation is appropriate; and
- reviewing and evaluating the performance of the Compensation Committee and the adequacy of its charter.

The Compensation Committee operates pursuant to a written charter adopted by the board of directors, which is available on our website at *www.aravive.com*. The charter describes in more detail the nature and scope of responsibilities of the Compensation Committee.

Nominating and Corporate Governance Committee

Dr. Giaccia and Dr. Ho currently serve as members of the Nominating and Corporate Governance Committee, each of whom, the board of directors has determined is independent in accordance with the Nasdaq definition of independence. Specific responsibilities of the Nominating and Corporate Governance Committee include:

- identifying, evaluating and recommending to the board of directors, candidates for election to the board, and making recommendations regarding re-election of incumbent directors;
- considering recommendations and proposals submitted by stockholders in respect of board nominees, establishing policies in respect of such recommendations and proposals (including stockholder communications with the board of directors), and recommending any action to the board in respect of such stockholder recommendations and proposals;
- identifying, evaluating and recommending to the board of directors, candidates to serve on committees of the board of directors,
- assessing the performance of the board of directors; and
- developing, recommending to the board of directors and reviewing corporate governance principles, and periodically reviewing such principles, our code of business conduct and other governance principles and making recommendations to the board of directors in respect thereof.

The Nominating and Corporate Governance Committee operates pursuant to a written charter adopted by the board of directors, which is available on our website at *www.aravive.com*. The charter describes in more detail the nature and scope of responsibilities of the Nominating and Corporate Governance Committee.

Changes to Procedures for Recommending Nominees to the Board of Directors.

None.

Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires our directors and executive officers, and persons who own more than ten percent of a registered class of our equity securities, to file with the SEC initial reports of ownership and reports of changes in ownership of our common stock and our other equity securities. Officers, directors and greater than ten percent stockholders are required by SEC regulation to furnish us with copies of all Section 16(a) forms they file.

To our knowledge, based solely on a review of the copies of such reports furnished to us and written representations that no other reports were required, during the fiscal year ended December 31, 2021, all Section 16(a) filing requirements applicable to our officers, directors and greater than ten percent beneficial owners were complied.

Code of Business Conduct and Ethics

We have adopted a code of conduct that applies to all officers, directors and employees, including those officers responsible for financial reporting. The full text of the code of conduct is posted on our website at *www.aravive.com*. If we make any substantive amendments to the code of conduct or grant any waiver from a provision of the code of conduct to any executive officer or director, we will promptly disclose the nature of the amendment or waiver on our website.

Item 11. Executive Compensation.

EXECUTIVE COMPENSATION

We are a "smaller reporting company" under Item 10 of Regulation S-K promulgated under the Exchange Act and the following compensation disclosure is intended to comply with the requirements applicable to smaller reporting companies. Although the rules allow us to provide less detail about our executive compensation program, the Compensation Committee is committed to providing the information necessary to help stockholders understand its executive compensation-related decisions. Accordingly, this section includes supplemental narratives that describe the 2021 executive compensation program for our named executive officers.

Named Executive Officers. The following individuals are our "named executive officers" for the year ended December 31, 2021:

- Gail McIntyre, our Chief Executive Officer and former Chief Scientific Officer
- Vinay Shah, our Chief Financial Officer
- Reshma Rangwala, our Former Chief Medical Officer (Dr. Rangwala resigned as our Chief Medical Officer, effective March 28, 2022)

Oversight of Executive Compensation

The compensation of our named executive officers is determined and approved by our Compensation Committee, in discussion with the Chief Executive Officer with respect to the other named executive officers. The Chief Executive Officer does not participate in discussions or decisions regarding her own compensation.

We believe that in order to create value for our stockholders, it is critical to attract, motivate and retain key executive talent by providing competitive compensation packages. Accordingly, we design our executive compensation programs to:

- attract, motivate and retain executives with the skills and expertise to execute our business plans;
- reward those executives fairly over time for actions consistent with creating long-term stockholder value;
- align the interests of our executive officers with those of our stockholders;
- provide compensation packages that are competitive, reasonable and fair within the highly competitive life sciences market for talented individuals.

The Compensation Committee uses the services of an independent compensation consultant who is retained by, and reports directly to, the Compensation Committee to provide the Compensation Committee with an additional external perspective with respect to its evaluation of relevant market and industry practices. At the end of 2020, the Compensation Committee retained Korn Ferry, as a third-party compensation consultant to assist the Compensation Committee in establishing overall compensation levels for 2021. Korn Ferry conducted analyses and provided advice on, among other things, the appropriate peer group, executive compensation for our executive officers and compensation trends in the life sciences industry. The peer group was recommended by Korn Ferry and chosen by the Compensation Committee in late 2020 based on the following parameters: biopharmaceutical companies that were developing oncology products, with a lead product in a similar phase of development (Phase 1 or 2 clinical trials) as well as other appropriate financial and organizational metrics.

SUMMARY COMPENSATION TABLE

The following table shows compensation awarded to or earned by our named executive officers, for the fiscal years ended December 31, 2021 and 2020.

Name and Principal Position	Year	Salary ($)	Option Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)(2)	All Other Compensation ($)(3)	Total ($)
Gail McIntyre(4)						
Chief Executive Officer	2021	500,000	824,291	187,500	12,202	1,523,993
	2020	404,188	848,641	149,400	8,882	1,411,111
Vinay Shah(5)						
Chief Financial Officer	2021	370,800	299,742	111,240	14,464	796,246
	2020	360,064	314,691	115,200	6,726	796,681
Reshma Rangwala(6)						
Former Chief Medical Officer	2021	415,000	49,957	124,500	4,971	594,428
	2020	108,582	311,678	33,200	2,286	455,746

(1) In accordance with SEC rules, this column reflects the aggregate fair value of the stock and option awards granted during the respective fiscal year computed as of their respective grant dates in accordance with Financial Accounting Standard Board Accounting Standards Codification Topic 718 for stock-based compensation transactions (ASC 718). The valuation assumptions used in determining such amounts are described in Note 2 and Note 9 to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

(2) Amounts reported in the non-equity incentive compensation plan column represent awards earned based on the achievement of company goals for the fiscal year presented as determined by the Compensation Committee of the Board and was paid in the first quarter of 2022 and 2021.

(3) All other compensation is primarily comprised of life insurance payments made by us and employer matching contributions for contributions to our 401(k) plan.

(4) Dr. McIntyre became our Chief Scientific Officer on February 12, 2019 and served in such role until she became our Chief Executive Officer on April 8, 2020.

(5) Mr. Shah became our Chief Financial Officer on October 12, 2018, when the Merger was completed.

(6) Dr. Rangwala became our Chief Medical Officer on September 28, 2020 and resigned as our Chief Medical Officer effective March 28, 2022.

NARRATIVE TO SUMMARY COMPENSATION TABLE

The three principal components of our executive compensation program for our named executive officers in 2021 were base salary, annual performance-based bonus and long-term equity compensation. Base salary provides financial stability and security through a fixed amount of cash for performing job responsibilities. Annual performance-based bonus and long-term equity incentive compensation are designed to reward achievement of the specific strategic goals that we believe will advance our business strategy and create long-term value for our stockholders.

Consistent with our goal of attracting, motivating and retaining a high-caliber executive team, our executive compensation program is designed to pay for performance. We utilize compensation elements that meaningfully align our named executive officer's interests with those of our stockholders to create long-term value. As such, a significant portion of our Chief Executive Officer's and other executive officers' compensation is "at risk", performance-based compensation, in the form of long-term equity awards and annual cash incentives that are only earned if we achieve measurable corporate metrics, as set forth in the table below.

Name	Fixed	"At Risk"	Annual Target Cash Incentive Awards	Equity Incentives
Gail McIntyre	32%	68%	16%	52%
Vinay Shah	44%	54%	18%	36%
Reshma Rangwala	65%	34%	26%	8%

We do not have any formal policies for allocating compensation among salary, annual target cash incentive awards and equity grants, short-term and long-term compensation or among cash and non-cash compensation. Instead, the Compensation Committee uses its judgment in determining a total compensation program for each named executive officer to recommend to the Board for its approval that is a mix of current, short-term and long-term incentive compensation, that it believes appropriate to achieve the goals of our executive compensation program and our corporate objectives.

Annual Base Salary

In January 2021, the Compensation Committee reviewed the base salaries for our named executive officers, the market data from Korn Ferry, the scope of each executive's responsibilities, each executive's prior experience and internal pay equity. After such review, Mr. Shah's base salary was increased from $360,000 to $370,800 and Dr. McIntyre's base salary for services as our Chief Executive Officer was increased to $500,000 from $415,000. In January 2022, Dr. McIntyre's base salary was raised to $510,000, Dr. Rangwala's base salary was raised to $440,000 and Mr. Shah's base salary was raised to $381,924. The named executive officers' 2021 annual base salaries approved by the Compensation Committee were as follows:

Name	2021 Base Salary ($)
Gail McIntyre	500,000
Vinay Shah	370,800
Reshma Rangwala	415,000

Annual Cash Incentive (Performance-Based Bonus) Opportunity

In addition to base salaries, our named executive officers are eligible to earn an annual performance-based cash bonus, which is designed to provide an appropriate incentive to our named executives to achieve defined annual corporate performance goals and to reward our executives for individual achievement towards these goals. The annual performance-based bonus each executive officer is eligible to receive is based on the individual's target bonus, as a percentage of base salary. The amount of the performance-based bonus, if any, an executive earns may vary from year to year based on the achievement of certain corporate performance goals recommended by the Compensation Committee and communicated to our named executive officers each year, prior to or shortly following the beginning of the year to which they relate.

The corporate goals typically relate to our annual company goals and various business accomplishments which vary from time to time depending on our overall strategic objectives. The Compensation Committee may, but need not, establish a specific weighting amongst various corporate goals. The proportional emphasis on each goal may vary from time to time depending on our overall strategic objectives and the Compensation Committee's and Board's subjective determination of which goals have more impact on our performance.

Pursuant to their employment agreements or offer letters, each named executive officer was eligible to earn a 2021 target bonus represented as a percentage of base salary as set forth below.

Name	Target Bonus Percent
Gail McIntyre	50%
Vinay Shah	40%
Reshma Rangwala	40%

For 2021, the corporate goals primarily included clinical milestones. In January 2022, after careful review, our Compensation Committee, concluded that we had achieved 75% of our corporate performance goals and therefore performance based bonuses were paid based upon 75% of target opportunities.

2021 Performance-Based Awards

After the end of the year, the Compensation Committee approves the extent to which the corporate goals have been achieved, based on management's review and recommendation, however, our executives do not make recommendations with respect to their own achievement. Accordingly, whether or not any bonus is awarded is determined in the Compensation Committee's discretion. Bonuses are not earned or vested until they are awarded and paid. The Compensation Committee also considers any significant corporate events or other significant accomplishments that were not contemplated at the beginning of the performance period in determining the extent to which the strategic goals were satisfied, such as the circumstances surrounding the feasibility of a goal being achieved.

On January 6, 2022, the Compensation Committee approved 2021 performance-based bonus awards set forth below related to 2021 performance based on the level of attainment of the 2021 specified goals.

Name	Base Salary	Target % of Base Salary	% of Target Achieved	Performance-Based Bonus Payout
Gail McIntyre	$500,000	50%	75%	$187,500
Vinay Shah	$370,800	40%	75%	$111,240
Reshma Rangwala	$415,000	40%	75%	$124,500

For the years ended December 31, 2020 and 2019, the % of target achieved was 80% an 92.5%, respectively.

Long-Term Incentive Compensation

Equity incentives are a key component of our executive compensation program that the Compensation Committee believes motivate executive officers to achieve our business objectives by tying incentives to the appreciation of our common stock. During 2021, we granted equity awards in the form of stock options that vest over a four-year period. Our long-term, equity-based incentive awards are designed to align the interests of our named executive officers and our other employees, non-employee directors and consultants with the interests of our shareholders. Because vesting is based on continued service, our equity-based incentives also encourage the retention of our named executive officers through the vesting period of the awards.

We use stock options as the primary incentive vehicle for long-term compensation to our named executive officers because they are able to profit from stock options only if our stock price increases relative to the stock option's exercise price. We generally provide initial grants in connection with the commencement of employment of our named executive officers as our Compensation Committee, determines appropriate. We also provide annual grants shortly following the end of each year.

In January 2021, the Compensation Committee awarded stock option grants to our named executive officers in conjunction with the Board's review of the 2020 corporate goals. Dr. McIntyre was granted stock options to purchase 165,000 shares at an exercise price of $5.95 per share. Mr. Shah was granted stock options to purchase 60,000 shares at an exercise price of $5.95 per share and Dr. Rangwala was granted stock options to purchase 10,000 shares at an exercise price of $5.95 per share.

In January 2022, the Compensation Committee awarded stock option grants to our named executive officers in conjunction with the Board's review of the 2021 corporate goals. Dr. McIntyre was granted stock options to purchase 425,000 shares at an exercise price of $2.18 per share. Mr. Shah was granted stock options to purchase 175,000 shares at an exercise price of $2.18 per share and Dr. Rangwala was granted stock options to purchase 175,000 shares at an exercise price of $2.18 per share.

Other Compensation

Health and Welfare Benefits

Our named executive officers are eligible to participate in all of our employee benefit plans, including our medical, dental, vision, group life and disability insurance plans, in each case on the same basis as other employees.

Employee Benefit Plans

Our named executive officers are eligible to participate in our employee benefit plans, including our medical, dental, vision, group life and accidental death and dismemberment insurance plans, in each case, on the same basis as all of our other employees. We maintain a 401(k) plan for the benefit of our eligible employees, including our named executive officers, as discussed in the section below entitled "401(k) plan."

401(k) Plan

All of our employees, including our named executive officers, are eligible to participate in our 401(k) Plan, which is a retirement savings defined contribution plan established in accordance with Section 401(a) of the Internal Revenue Code of 1986, as amended ("Code"). Pursuant to our 401(k) Plan, employees may elect to defer their eligible compensation into the plan on a pre-tax basis, up to the statutorily prescribed annual limit of $19,500 in 2021 (additional salary deferrals not to exceed $6,500 are available to those employees 50 years of age or older) and to have the amount of this reduction contributed to our 401(k) Plan. In general, eligible compensation for purposes of the 401(k) plan includes an employee's wages, salaries, fees for professional services and other amounts received for personal services actually rendered in the course of employment with us, to the extent the amounts are included in gross income, and subject to certain adjustments and exclusions required under the Code. The 401(k) Plan currently does not offer the ability to invest in our securities.

None of our named executive officers participate in or have account balances in qualified or non-qualified defined benefit plans, non-qualified defined contribution plans or pension plans sponsored by us.

Pension Benefits

We do not maintain any pension benefit plans.

Nonqualified Deferred Compensation

We do not maintain any nonqualified deferred compensation plans.

Employment Offer Letters, Severance and Change in Control Arrangements

We have entered into employment offer letters with each of our named executive officers. The offer letters provide for "at will" employment and set forth the terms and conditions of employment, including the initial annual base salary, target bonus opportunity, equity compensation, severance benefits and eligibility to participate in our employee benefit plans and programs. There are no ongoing guarantees of increases to future compensation such as base salary increases. Our named executive officers were each required to execute our standard proprietary information and inventions agreement. The material terms of these employment offer letters are summarized below. These summaries are qualified in their entirety by reference to the actual text of the offer letters, which are filed as exhibits attached.

Gail McIntyre

During the years ended December 31, 2020 and 2019, Dr. McIntyre's employment was at-will per the terms of an offer letter with Private Aravive, dated January 1, 2017, as amended February 6, 2019. Dr. McIntyre began work as a full-time employee of Private Aravive in January 2017 and was originally eligible to receive an annual salary of $264,000 and a bonus target of $39,600 and three months' salary as severance in the event of certain terminations. On February 6, 2019, the Compensation Committee approved an increase in Dr. McIntyre's annual base salary to $325,000 and her target bonus was increased to 40% of her annual base salary. In connection with Dr. McIntyre's employment by Aravive Biologics, Dr. McIntyre was granted options to purchase shares of Aravive Biologics common stock, each of which were fully vested and were converted into options to purchase 59,281 shares of our common stock at the effective time of the Merger.

On March 26, 2020, we entered into an employment offer letter with Dr. McIntyre ("the McIntyre Offer Letter") that superseded the offer letter with Aravive Biologics that provided that provided, among other things, (i) for Dr. McIntyre to serve as our Chief Scientific Officer, (ii) an annual base salary of $360,000 for such service; (iii) a target bonus equal to 40% of Dr. McIntyre's annual base salary. In addition, Dr. McIntyre's Offer Letter provides for severance payments upon certain conditions if we terminate her employment for any reason other than cause or permanent disability, and not in connection with a change in control and that upon a qualifying termination of employment in connection with a change of control, she would be entitled to certain severance payments and benefits, which are described below under "—Potential payments upon termination or change in control.

Effective as of April 8, 2020, upon her appointment as our Chief Executive Officer, we entered into an amendment or the 2020 Amendment to the McIntyre Offer Letter that we had entered into with Dr. McIntyre on March 26, 2020. The Amendment provides, among other things, (i) that Dr. McIntyre will serve as our President and Chief Executive Officer,(ii) an annual base salary of $415,000 for such service; (iii) a target bonus equal to 45% of Dr. McIntyre's annual base salary; (iv) up to 12 months of salary continuation and reimbursement of COBRA coverage and a pro-rated portion of her year-end target bonus contingent upon corporate goals being met, if terminated for any reason other than Cause or Permanent Disability and not in connection with a Change in Control (as such terms are defined in the Offer Letter). Dr. McIntyre was also granted an option to purchase 80,000 shares of common stock vesting pro rata on a monthly basis over a four-year period.

On January 25, 2021, the Company entered into an amendment to the 2021 Amendment, to the McIntyre Offer Letter, as amended by the 2020 Amendment. The 2021 Amendment provides that Dr. McIntyre will receive: (i) effective as of January 1, 2021, an annual base salary of $500,000, less required deductions and withholdings, payable in accordance with our standard payroll schedule, for service as our Chief Executive Officer (which base salary was increased to $510,000 in January 2022); and (ii) a target bonus equal to 50% of Dr. McIntyre's annual base salary. All other terms of the McIntyre Offer Letter as amended by the 2020 Amendment remain in full force and effect. Dr. McIntyre was also granted an option to purchase 165,000 shares of the Company's common stock with an exercise price of $5.95 per share and vesting pro rata on a monthly basis over a four- year period.

Vinay Shah

During the years ended December 31, 2018 and 2019, Mr. Shah's employment was at-will per the terms of an offer letter with Aravive Biologics dated February 1, 2017 as later amended on May 30, 2018 and February 6, 2019 pursuant to which he was entitled to receive an annual base salary of $335,000 for 2019, an annual target bonus of 40% of his base salary and six months' salary as severance in the event of certain terminations.

On March 26, 2020, we entered into an employment offer letter with Mr. Shah or the Shah Offer Letter that superseded the offer letter with Aravive Biologics and provides that Mr. Shah will serve as our Chief Financial Officer on an "at will" basis with compensation that included a base salary of $360,000, which was increased to $370,800 in January 2021 and further increased to $370,800 in January 2022 and a target bonus equal to 40% of Mr. Shah's annual base salary. In addition, the Shah Offer Letter provides for severance payments upon certain conditions if we terminate his employment for any reason other than cause or permanent disability, and not in connection with a change in control and that upon a qualifying termination of employment in connection with a change of control, he would be entitled to certain severance payments and benefits, which are described below under "—Potential payments upon termination or change in control."

Reshma Rangwala

Effective September 28, 2020, we appointed Dr. Reshma Rangwala as our Chief Medical Officer. Dr. Rangwala resigned from her position as our Chief Medical Officer, effective March 28, 2022. Pursuant to the terms of our employment offer letter effective September 28, 2020 with Dr. Rangwala or the Rangwala Offer Letter, her employment with us is on an "at will" basis. Dr. Rangwala's compensation for services provided as our Chief Medical Officer includes: (i) an annual base salary of $415,000, which was increased to $440,000 in January 2022; (ii) an annual cash bonus targeted at 40% of her base salary, dependent on performance with respect to both corporate and individual goals, as determined by our Board of Directors; (iii) a $50,000 retention bonus to be paid on the 18-month anniversary of the effective date of the offer letter; (iv) an option to purchase 75,000 shares of our common stock pursuant to our 2019 Equity Incentive Plan, with 25% to vest upon the 12-month anniversary of the effective date of the offer letter and the remainder to vest equally in monthly installments over a 36 month period at an exercise price to be determined by the Company's Board when such option is granted. The Rangwala Offer Letter also provided for severance payments upon certain conditions if we terminate her employment for any reason other than cause or permanent disability, and not in connection with a change in control and that upon a qualifying termination of employment in connection with a change of control, she would be entitled to certain severance payments and benefits, which are described below under "—Potential payments upon termination or change in control. Dr Rangwala resigned as our Chief medical Officer on March 28, 2022.

Executive Officer Offer Letters Subsequent to 2021

Effective March 21, 2022 we appointed Dr. Dove as our Chief Operating Officer. Pursuant to the terms of the offer letter effective March 21, 2022 with Dr. Dove, his employment with us is on an "at will" basis. Dr. Dove's compensation for services provided as our Chief Operating Officer includes: (i) an annual base salary of $385,000; (ii) an annual cash bonus targeted at 40% of his base salary, dependent on performance with respect to both corporate and individual goals, as determined by our Board of Directors; (iii) an option to purchase 200,000 shares of our common stock pursuant to our 2019 Equity Incentive Plan, with 25% to vest upon the 12-month anniversary of the effective date of the offer letter and the remainder to vest equally in monthly installments over a 36 month period at an exercise price to be determined by the Company's Board when such option is granted.

POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE IN CONTROL

Severance Benefits Other Than in Connection With a Change in Control

The McIntyre Offer Letter and Shah Offer Letter provide that if we terminate any of their employment for any reason other than Cause or Permanent Disability (as defined in the Offer Letters), and not in connection with a change in control, if they (i) execute and do not revoke a release of claims within 60 days following the date of termination of employment with us and (ii) returns all of our property in his or her possession he or she will be entitled to (a) twelve months for Dr. McIntyre and nine months for Mr. Shah of salary continuation payments (b) if he or she timely elects to continue her health insurance coverage under COBRA, we will pay a portion of him or her monthly COBRA premiums (at the same rate that we pay for active employees) for up to twelve months following the date he or she terminates employment with us (c) 12 months accelerated vesting of stock options and RSUs awarded to him or her and (d) up to 9 months post-termination to exercise any vested shares subject to such option. In addition, if terminated in connection with a change of control, severance benefits will be those specified under our 2019 Equity Incentive Plan and our Change in Control Severance Plan, which provides for specified severance benefits to certain eligible officers and employees of our company set forth below. In addition, if during the twelve-month period commencing on the closing date of a Change in Control we terminate his or her employment for any reason other than Cause or death or disability or he or she resigns for Good Reason, all unvested equity awards will immediately vest, subject to certain restriction. In addition, under the 2019 Equity Incentive Plan, if involuntarily terminated in connection with certain corporate transactions, including a change in control, Dr. McIntyre would be eligible for full accelerated vesting of her outstanding stock options and RSUs. The Rangwala Offer Letter had similar severance provisions to those set forth in the Shah Offer Letter

Change in Control Severance Benefit Plan

We have adopted a change in control severance benefit plan (the "severance plan"). The severance plan provides certain of our employees, including our currently employed Named Executive Officers, with severance payments and benefits upon certain qualifying terminations of employment within a one-year period following the closing of a change in control, as defined in the severance plan. The summary below is qualified by reference to the actual text of the severance plan, which is filed as an exhibit to the Form S-1, as amended, filed with the SEC on March 10, 2014.

Under the severance plan, in the event of a participant's involuntary termination without cause (and not due to death or disability) or if a participant resigns for good reason (as each terms is defined in the severance plan), if the participant in the severance plan (i) executes and does not revoke a release of claims within 60 days following the date he terminates employment with us and (ii) returns all of our property in his possession, he will be entitled to cash severance equal to the sum of his or her monthly base salary and monthly annual bonus target, multiplied by a severance multiplier, which is 15 in the case of the Chief Executive Officer and 12 in the case of the other C-Suite employees. In addition, following a qualifying termination, if a participant timely elects to continue his health insurance coverage under COBRA, we will pay a portion of his monthly COBRA premiums for a period of specified months following the date of termination

All stock awards which are vested and exercisable as of the date of a qualifying termination under the severance plan (including by virtue of the provisions of the applicable equity plan) will remain outstanding and exercisable until the earliest to occur of (i) the last day of the applicable severance period, which is 15 months in the case of the Chief Executive Officer and 12 months in the case of the other C-Suite employees (ii) the expiration of the original term of such stock awards.

If one of our named executive officers is entitled to severance benefits under the severance plan by virtue of a qualifying termination of employment within 12 months following a change in control, he would not be entitled to severance benefits under the terms of his offer letter.

In addition, the severance plan provides that, except as otherwise expressly provided in an agreement between us and a participant, if any payment or benefit a participant would receive in connection with a change in control would constitute a "parachute payment" within the meaning of Section 280G of the Internal Revenue Code and such payment or benefit would be subject to the excise tax imposed by Section 4999 of the Internal Revenue Code, then such payment or benefit will be equal to either (i) the largest portion of the change in control payment that would result in no portion of the payment or benefit being subject to the excise tax, or (ii) the largest portion, up to and including the total payment or benefit, whichever amount, after taking into account all applicable taxes, including the excise tax (all computed at the highest applicable marginal rate), would result in the participant's receipt, on an after-tax basis, of the greatest economic benefit to the participant, notwithstanding that all or some portion of the payment or benefit may be subject to the excise tax. If a reduction is so required, the reduction will occur in the order specified in the severance plan.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR END

The following table shows for the fiscal year ended December 31, 2021, certain information regarding outstanding equity awards at fiscal year-end for the Named Executive Officers. Each award issued to Dr. McIntyre, Mr. Shah, and Dr. Rangwala set forth below is subject to accelerated vesting upon a qualifying termination of his employment, as described under "—Potential Payments Upon Termination or Change in Control." Dr. Rangwala resigned from her position as our Chief Medical Officer, effective March 28, 2022.

OUTSTANDING EQUITY AWARDS AT DECEMBER 31, 2021

		Option Awards(1)			
Name	Grant Date	Number of Securities Underlying Unexercised options (#) exercisable	Number of Securities Underlying Unexercised options (#) unexercisable	Option Exercise Price ($)	Option Expiration Date
Gail McIntyre	6/15/2017(4)	29,641	—	$ 0.66	6/14/2027
	12/14/2017(4)	14,820	—	$ 0.90	12/13/2027
	3/20/2018(4)	14,820	—	$ 0.90	3/19/2028
	2/28/2019(3)	37,541	15,459	$ 5.83	2/27/2029
	1/22/2020(3)	23,279	25,304	$ 10.84	1/21/2030
	4/8/2020(3)	33,333	46,667	$ 6.16	4/7/2030
	1/25/2021(3)	37,812	127,188	$ 5.95	1/24/2031
Vinay Shah	10/01/2014(4)	19,380	—	$ 0.24	9/30/2024
	6/15/2017(4)	38,001	—	$ 0.66	6/14/2027
	12/14/2017(4)	19,000	—	$ 0.90	12/13/2027
	3/20/2018(4)	19,000	—	$ 0.90	3/19/2028
	2/28/2019(3)	26,916	11,084	$ 5.83	2/27/2029
	1/22/2020(3)	16,687	18,139	$ 10.84	1/21/2030
	1/25/2021(3)	13,750	46,250	$ 5.95	1/24/2031
Reshma Rangwala	9/28/2020(2)	23,437	51,563	$ 4.95	9/27/2030
	1/25/2021(3)	2,291	7,709	$ 5.95	1/24/2031

(1) Except as otherwise indicated, vesting of all options is subject to continued service on the applicable vesting date.
(2) The shares subject to the stock options vest over a four-year period as follows: 25% of the shares underlying the options vest on the one-year anniversary of the vesting start date, and thereafter 1/48th of the shares vest each month.
(3) 1/48th of the shares subject to the option become exercisable monthly measured from the date of the grant.
(4) The shares subject to these options vested in full upon the closing of the Merger and were assumed by us in the Merger.

Treatment of stock awards under the 2019 Plan

The 2019 Plan, provides that in the event of certain corporate transactions, as defined in the 2019 Plan, the following provisions will apply to outstanding stock awards, unless otherwise provided in a stock award agreement or any other written agreement between us and a participant, or unless otherwise expressly provided by the board of directors at the time of grant of a stock award:

The surviving or acquiring corporation (or its parent) may assume, continue or substitute similar stock awards for outstanding stock awards under the 2019 Plan and any reacquisition or repurchase rights held by us may be assigned to the surviving or acquiring corporation (or its parent);

To the extent that outstanding stock awards are not so assumed, continued or substituted, the vesting and, if applicable, exercisability of any such stock awards held by participants whose continuous service has not terminated prior to the effective time of the corporate transaction will be accelerated in full to a date prior to the effective time of such corporate transaction (contingent upon the effectiveness of the corporate transaction), and such stock awards will terminate if not exercised (if applicable) at or prior to the effective time of such corporation transaction, and any reacquisition or repurchase rights held by us will lapse, contingent upon the effectiveness of such corporate transaction;

To the extent that outstanding stock awards are not so assumed, continued or substituted, the vesting and, if applicable, exercisability of any such stock awards held by participants whose continuous service has terminated prior to the effective time of the corporate transaction will not be accelerated and all unvested stock awards held by such participants will terminate if not exercised (if applicable) prior to the effective time of the corporate transaction, but any reacquisition or repurchase rights held by us may continue to be exercised notwithstanding such corporate transaction; or

To the extent a stock award will terminate if not exercised prior to the effective time of a corporate transaction, the board of directors may provide that the holder of the stock award may not exercise the stock award, but instead will receive a payment, in such form as may be determined by the board of directors, equal in value to the excess, if any, of the value of the property the participant would have received upon exercise of the stock award over any exercise price payable by such holder in connection with such exercise. In addition, any escrow, holdback, earn out or similar provisions in the definitive agreement for the corporate transaction may apply to such payment to the same extent and in the same manner as such provisions apply to the holders of common stock.

A stock award may be subject to additional acceleration of vesting and exercisability upon or after a change in control, as defined in the 2019 Plan, as may be provided in the stock award agreement for such stock award or in any other written agreement between us and a participant, but in the absence of such a provision, no such acceleration will occur.

For purposes of the 2019 Plan, a corporate transaction is generally the consummation of: (1) a sale of all or substantially all of our assets, (2) the sale or disposition of more than 50% of our outstanding securities, (3) a merger or consolidation where we do not survive the transaction, or (4) a merger or consolidation where we do survive the transaction but the shares of our common stock outstanding immediately before such transaction are converted or exchanged into other property by virtue of the transaction.

Treatment of stock awards under the 2014 Plan

The 2014 Plan, provides that in the event of certain corporate transactions, as defined in the 2014 Plan, the following provisions will apply to outstanding stock awards, unless otherwise provided in a stock award agreement or any other written agreement between us and a participant, or unless otherwise expressly provided by the board of directors at the time of grant of a stock award:

The surviving or acquiring corporation (or its parent) may assume, continue or substitute similar stock awards for outstanding stock awards under the 2014 Plan and any reacquisition or repurchase rights held by us may be assigned to the surviving or acquiring corporation (or its parent); provided, that if any such stock awards are so assumed, continued or substituted, if a participant incurs an involuntary termination on or within 12 months following the date of such corporate transaction, any unvested shares subject to such assumed, continued or substituted stock awards will vest in full as of the date of such termination;

To the extent that outstanding stock awards are not so assumed, continued or substituted, the vesting and, if applicable, exercisability of any such stock awards held by participants whose continuous service has not terminated prior to the effective time of the corporate transaction will be accelerated in full to a date prior to the effective time of such corporate transaction, and such stock awards will terminate if not exercised (if applicable) at or prior to the effective time of such corporation transaction, and any reacquisition or repurchase rights held by us will lapse, contingent upon the effectiveness of such corporate transaction;

To the extent that outstanding stock awards are not so assumed, continued or substituted, the vesting and, if applicable, exercisability of any such stock awards held by participants whose continuous service has terminated prior to the effective time of the corporate transaction will not be accelerated and all unvested stock awards held by such participants will terminate if not exercised (if applicable) prior to the effective time of the corporate transaction, but any reacquisition or repurchase rights held by us may continue to be exercised notwithstanding such corporate transaction; or

To the extent a stock award will terminate if not exercised prior to the effective time of a corporate transaction, the board of directors may provide that the holder of the stock award may not exercise the stock award, but instead will receive a payment, in such form as may be determined by the board of directors, equal in value to the excess, if any, of the value of the property the participant would have received upon exercise of the stock award over any exercise price payable by such holder in connection with such exercise.

A stock award may be subject to additional acceleration of vesting and exercisability upon or after a change in control, as defined in the 2014 Plan, as may be provided in the stock award agreement for such stock award or in any other written agreement between us and a participant, but in the absence of such a provision, no such acceleration will occur.

For purposes of the 2014 Plan, an involuntary termination generally means, during the 12 months following the closing of a corporate transaction or change in control, either (i) a termination of service other than for cause (as defined in the 2014 Plan) or (ii) a voluntary resignation following: a material diminution in the participant's base salary; a material diminution in the participant's authority, duties, position or responsibilities; a material diminution in the authority, duties, position or responsibilities of the participant's supervisor (including a requirement that a participant report to a corporate officer or employee instead of directly to the board of directors); a material diminution in the budget over which the participant retains authority; a relocation of the participant's principal place of work to a location more than 50 miles away from the principal place of work prior to the consummation of a corporate transaction or a change in control; or any other act or omission that constitutes a material breach by us of the 2014 Plan.

Treatment of stock options under the Aravive Biologics, Inc 2010 and 2017 Equity Incentive Plans

In connection with the Merger, we assumed the Aravive Biologics, Inc. 2010 and 2017 Equity Incentive Plans. The Aravive Biologics, Inc. 2010 and 2017 Equity Incentive Plans provide that in the event of certain corporate transactions, as defined in the plans, the board of directors may take one or more of the following actions with respect to outstanding stock awards, unless otherwise provided in a stock award agreement or any other written agreement between us and a participant, or unless otherwise expressly provided by the board of directors at the time of grant of a stock award: each outstanding stock award may be assumed or continued or an equivalent stock award may be substituted by a successor corporation and any reacquisition or repurchase rights held by us in respect of common stock issued pursuant to prior stock awards may be assigned to the successor corporation. The plans also provide that in the event of a specified corporate transaction the board of directors may determine to accelerate the vesting, in whole or in part of a stock award, with such stock award becoming fully vested and exercisable prior to the corporate transaction arrange for the lapse of any reacquisition or repurchase rights held by us with respect to the stock award or cancel or arrange for the cancellation of a stock award in exchange for cash consideration. Any awards that have not been assumed, continued, substituted, or exercised prior to the corporate transaction will terminate at the closing of the transaction. All options issued under the Aravive Biologics, Inc 2010 and 2017 Equity Plans that were outstanding on the closing of the Merger vested upon the closing of the Merger.

DIRECTOR COMPENSATION

The board of directors reviews the compensation of our non-employee directors from time to time to ensure that the amount and form of such compensation reflects the practices of the competitive market. In January 2020, the board of directors evaluated a competitive market analysis prepared by the Compensation Committee's compensation consultant, Korn Ferry, which assessed our then-current director compensation policy. This analysis examined how our director compensation levels, practices, and design features compared to the constituent members of our compensation peer group, which was the same peer group that the Compensation Committee used as a reference when setting executive compensation. Based on this analysis, as well as its consideration of our financial performance, general market conditions, and the interests of our stockholders, the board of directors determined at that time to maintain our non-employee director compensation policy at its then-current cash and equity compensation levels. These compensation levels were maintained until September 2020 when the board of directors evaluated a competitive market analysis prepared by the Compensation Committee's compensation consultant, Korn Ferry, which assessed our then-current director compensation policy. In September 2020, the committee annual fees remained the same, the non-executive annual cash compensation was increased from $40,000 to $65,000, the cap for total compensation to be received by the chairperson was increased from $70,000 to $95,000, and the annual equity awards and new director awards were revised from a grant of an option to purchase 7,500 shares of common stock to a grant of an option to purchase shares of common stock having a grant date fair market value of $75,000.

The following table shows for the fiscal year ended December 31, 2021 certain information with respect to the compensation of all of our current and former non-employee directors:

DIRECTOR COMPENSATION FOR FISCAL 2021

Name	Fees Earned or Paid in Cash ($)	Option Awards ($) (1)	Restricted Stock Awards ($)	Total ($)
Fredric N. Eshelman, Pharm. D.(2)	$ 95,000	$ 75,000	—	$ 170,000
Amato Giaccia, Ph.D.	$ 86,841	$ 75,000	—	$ 161,841
Michael W. Rogers(3)	$ 92,500	$ 75,000	—	$ 167,500
Eric Zhang	$ 72,500	$ 75,000	—	$ 147,500
John A. Hohneker, M.D. (4)	$ 44,397	$ 175,000	—	$ 219,397
Peter T.C. Ho, M.D., Ph.D.(4)	$ 42,293	$ 175,000	—	$ 217,293
Sigurd Kirk (4)	$ 45,983	$ 175,000	—	$ 220,983

(1) In accordance with SEC rules, this column reflects the aggregate fair value of the option awards granted during the respective fiscal year computed as of their respective grant dates in accordance with Financial Accounting Standard Board Accounting Standards Codification Topic 718 for stock-based compensation transactions (ASC 718). The valuation assumptions used in determining such amounts are described in Note 2 and Note 9 to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

(2) Dr. Eshelman was appointed Chairman of the Board on April 8, 2020 and Executive Chairman of the Board on January 3, 2022.

(3) Mr. Rogers was appointed as a director on September 15, 2020.

(4) Dr. Hohneker, Dr Ho and Mr. Kirk were appointed directors on May 12, 2021.

The table below shows the aggregate number of option awards outstanding at fiscal year-end for each of our current and former non-employee directors.

Name	Number of Shares Subject to Outstanding Options as of December 31, 2021
Fredric Eshelman, Pharm. D.(1)	49,567
Amato Giaccia, Ph.D.(2)	215,563
Michael Rogers(3)	52,823
Eric Zhang	58,529
John A. Hohneker, M.D. (4)	43,492
Peter T.C. Ho, M.D., Ph.D.(4)	43,492
Sigurd Kirk (4)	43,492

(1) Dr. Eshelman was appointed Chairman of the Board on April 8, 2020 and Executive Chairman of the Board on January 3, 2022.

(2) Amounts in the director compensation table above for Dr. Giaccia and Dr. Tabibiazar include options assumed by us in the Merger that were issued to such individuals by Aravive Biologics prior to the Merger.

(3) Mr. Rogers was appointed as a director on September 15, 2020.

(4) Dr. Hohneker, Dr. Ho and Mr. Kirk were appointed directors on May 12, 2021.

NON-EMPLOYEE DIRECTOR COMPENSATION POLICY

Under our non-employee director compensation policy in effect during the year ended December 31, 2021, we paid each of our non-employee directors a cash retainer for service on the board of directors and for service on each committee on which the director is a member. The chairman of each committee receives an additional retainer for such service. These retainers are payable in arrears in four equal quarterly installments on the last day of each quarter, provided that the amount of such payment will be prorated for any portion of such quarter that the director is not serving on the board of directors.

The retainers paid to non-employee directors for service on the board of directors and for service on each committee of the board of directors on which the director was a member for the year ended December 31, 2021 are as follows:

	Member Annual Service Retainer	Chairman Annual Service Retainer
Board	$ 65,000	$ 30,000*
Audit Committee	$ 7,500	$ 15,000
Compensation Committee	$ 5,000	$ 12,500
Nominating and Corporate Governance Committee	$ 3,500	$ 10,000
Research & Development Committee	$ 3,500	$ 10,000
Business Strategy Committee	$ 3,500	$ 10,000

* In September 2020, the policy was amended to increase the non-executive annual cash compensation from $40,000 to $65,000, increase the cap for total compensation to be received by the chairperson from $70,000 to $95,000, and the annual equity awards and new director awards were revised from a grant of an option to purchase 7,500 shares of common stock to a grant of an option to purchase shares of common stock having a grant date fair market value of $75,000

The board of directors reviews the compensation of our non-employee directors from time to time to ensure that the amount and form of such compensation reflects the practices of the competitive market. In September 2020, the board of directors evaluated a competitive market analysis prepared by the Compensation Committee's compensation consultant, Korn Ferry, which assessed our then-current director compensation policy. This analysis examined how our director compensation levels, practices, and design features compared to the constituent members of our compensation peer group, which is the same peer group that we use as a reference when setting executive compensation. Based on this analysis, as well as its consideration of our financial performance, general market conditions, and the interests of our stockholders, the board of directors determined to amend our non-employee director compensation policy, effective September 8, 2020, to provide the cash compensation set forth above and the equity compensation described below.

On the date of each annual meeting of stockholders held, each non-employee director that continues to serve as a non-employee member on the board of directors will receive options to acquire shares of common stock having a fair value on the grant date of $75,000, vesting 1/12th per month with full vesting, if not fully vested at such time, on the date of our next annual meeting of stockholder. The exercise price of such options will equal the fair market value of our common stock on the date of grant. For any new non-employee director who joins the board of director at a time other than at the annual stockholder meeting, then, in addition to the new non-employee director grants, such directors will receive an option to purchase shares of common stock, such number of shares of common stock equity equal to the product of the (i) number of shares of common stock having a grant date fair value of $75,000 and (ii) a fraction with (x) a numerator equal to the number of days between the date of the director's initial election or appointment to the board of directors and the date which is the first anniversary of the date of the most recent annual stockholder meeting occurring before the director is elected or appointed to the board of directors, and (y) a denominator equal to 365. In each case, vesting of the award is subject to the director's continuous service on each vesting date. This policy is intended to provide a total compensation package that enables us to attract and retain qualified and experienced individuals to serve as directors and to align our directors' interests with those of our stockholders in accordance with the terms of the policy. On September 10, 2021 we issued an option to each of Dr. Eshelman, Dr. Giaccia, Dr. Tabibiazar, Mr. Rogers, Mr. Zhang, Dr. Ho, Dr. Hohneker and Mr. Kirk to purchase 22,812 shares of our common stock. On July 1, 2021, for their appointment to the Board, Dr. Ho, Dr. Hohneker and Mr. Kirk were each issued an annual option to purchase 5,245 shares of common stock and new director options to purchase 15,435 shares of common stock.

Directors have been and will continue to be reimbursed for expenses directly related to their activities as directors, including attendance at board and committee meetings. Directors are also entitled to the protection provided by their indemnification agreements and the indemnification provisions in our certificate of incorporation and bylaws.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding the beneficial ownership of our common stock as of March 25, 2022 by: (i) each director; (ii) each of the executive officers named in the Summary Compensation Table; (iii) all executive officers and directors of the Company as a group; and (iv) all those known by us to be beneficial owners of more than five percent of its common stock.

	Beneficial Ownership(1)	
Beneficial Owner	**Number of Shares**	**Percent of Total**
Greater than 5% stockholders other than executive officers and directors:		
Invus Public Equities, L.P and its affiliated entities(2)	1,311,291	6.2%
Raymond Tabibiazar, M.D.(3)	1,612,896	7.4%
Eshelman Ventures, LLC(4)	4,280,098	19.84%
Named Executive officers and directors:		
Fredric N. Eshelman, Pharm. D.(5)	4,319,769	19.99%
Amato Giaccia, Ph.D.(6)	1,149,839	5.4%
Michael W. Rogers(7)	38,558	*
Eric Zhang(8)	910,691	4.3%
Vinay Shah(9)	369,954	1.7%
Gail McIntyre(10)	269,360	1.3%
Leonard Scott Dove, Ph.D.(11)	0	*
Peter T.C. Ho, M.D., Ph.D.(12)	26,598	*
John A. Hohneker, M.D. (13)	25,598	*
Sigurd Kirk (14)	25,598	*
All current executive officers and directors as a group (10 persons)(15)	7,135,965	31.8%

* Represents beneficial ownership of less than one percent (1%) of the outstanding common stock.

(1) This table is based upon information supplied by officers, directors and principal stockholders and Schedules 13D and 13G filed with the SEC. Unless otherwise indicated in the footnotes to this table and subject to community property laws where applicable, we believe that each of the stockholders named in this table has sole voting and investment power with respect to the shares indicated as beneficially owned. Applicable percentages are based on 21,094,357 shares outstanding on March 25, 2022, adjusted as required by rules promulgated by the SEC, which does not include 4,850,241 shares of our common stock (or common stock equivalents in lieu thereof) issued upon closing of the registered direct offering on March 31, 2022. Beneficial ownership of shares is determined in accordance with the rules of the SEC and includes voting and investment power with respect to the shares. Shares of common stock subject to outstanding options that are exercisable within 60 days of March 25, 2022 are deemed outstanding for computing the percentage of ownership of the person holding such options. Unless otherwise indicated, the address of each beneficial owner listed in the table below is c/o Aravive, Inc., River Oaks Tower, 3730 Kirby Drive, Suite 1200, Houston, Texas 77098.

(2) Information is based upon a Schedule 13G/A filed with the SEC on February 16, 2021 by Invus Public Equities, L.P (“Invus Public Equities”)., Invus Public Equities Advisors, LLC (“Invus PE Advisors”), Artal Treasury Limited (“Artal Treasury”),Artal International S.C.A (“Artal International”), Artal International Management S.A. (“Artal Management”), Artal Group S.A. (“Artal Group”), Wetsend S.A. (“Westend”), Stichting Administratiekabntoor Westland (“Stichting”)and Mr. Amaury Wittouck (“Wittock”). Invus Public Equities directly holds the 1,311,291 shares of common stock. Invus PE Advisors, as the general partner of Invus Public Equities, controls Invus Public Equities and accordingly may be deemed to beneficially own the shares held by Invus Public Equities. Artal International Management, as the managing partner of Artal International, controls Artal International and, accordingly, may be deemed to beneficially own the Shares that Artal International may be deemed to beneficially own. Artal Group, as the parent company of Artal International Management, controls Artal International Management and, accordingly, may be deemed to beneficially own the Shares that Artal International Management may be deemed to beneficially own. Westend, as the parent company of Artal Group, controls Artal Group and, accordingly, may be deemed to beneficially own the Shares that Artal Group may be deemed to beneficially own. The Stichting, as majority shareholder of Westend, controls Westend and, accordingly, may be deemed to beneficially own the Shares that Westend may be deemed to beneficially own. As of January 11, 2021, Mr. Wittouck, as the sole member of the board of the Stichting, controls the Stichting and, accordingly, may be deemed to beneficially own the Shares that the Stichting may be deemed to beneficially Artal International, as its Geneva branch is the sole stockholder of Artal Treasury, may be deemed to beneficially own the shares that Artal Treasury may be deemed to beneficially own. Artal International Management, as the managing partner of Artal International, controls Artal International and, accordingly, may be deemed to beneficially own the shares that Artal International may be deemed to beneficially own. Artal Group, as the parent company of Artal International Management, controls Artal International Management and, accordingly, may be deemed to beneficially own the shares that Artal International Management may be deemed to beneficially own. Westend, as the parent company of Artal Group, controls Artal Group and, accordingly, may be deemed to beneficially own the shares that Artal Group may be deemed to beneficially own. The Stichting, as the majority shareholder of Westend, controls Westend and, accordingly, may be deemed to beneficially own the shares that Westend may be deemed to beneficially own. As of January 11, 2021, Mr. Wittouck, as the sole member of the board of the Stichting, controls the Stichting and, accordingly, may be deemed to beneficially own the shares that the Stichting may be deemed to beneficially own. The address for Invus Public Equities and Invus PE Advisors is 750 Lexington Avenue, 30th Floor, New York, New York 10022. The address for Artal Treasury is Suite 4, Borough House, Rue du Pree, St. Peter Port, Guernsey GYI 3JJ. The address for Artal International, Artal International Management and Artal Group, Westend is Valley Park, 44, Rue de la Vallée, L-2661, Luxembourg. The address for Stichting is Claude Debussylaan, 46, 1082 MD Amsterdam, The Netherlands. The address for Wittouck is Valley Park, 44, Rue de la Vallée, L-2661, Luxembourg.

(3) Information is based upon a Schedule 13D filed with the SEC on April 12, 2021. Includes an aggregate of 612,145 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022. The address for Dr. Tabibiazar is c/o 526 Ventures, 245 First Street, 18th Floor, Cambridge, Massachusetts 02142.

(4) Information for Eshelman Ventures, LLC is based upon a Schedule 13D filed with the SEC on January 6, 2022. Consists of: (i) 3,806,098 shares of Common Stock directly held by Eshelman Ventures, LLC, an entity wholly owned by Dr. Eshelman, and (ii) 474,000 Warrant Shares issuable upon exercise of the Pre-Funded Warrant. Does not include any securities issued to Eshelman Ventures, LLC upon closing of the registered direct offering on March 31, 2022.

Unless the Company obtains the approval of its stockholders, the aggregate number of shares of Common Stock that may be issued under the Pre-Funded Warrant and the Investment Agreement may not exceed the maximum number of shares of Common Stock which the Company may issue without stockholder approval under the Nasdaq Stock Market Listing Rule 5635(b). As a result of such limitation, the beneficial ownership of Eshelman Ventures, LLC includes 474,000 Warrant Shares issuable upon exercise of the Pre-Funded Warrant and excludes 4,071,455 Warrant Shares issuable upon exercise of the Pre-Funded Warrant. Dr. Eshelman may be deemed to be the beneficial owner of such shares held by Eshelman Ventures, LLC. Pursuant to the Pre-Funded Warrant and the Investment Agreement, Eshelman Ventures, LLC may acquire up to 4,545,455 shares of Common Stock in the aggregate (subject to adjustment), as described in "The Issuance Proposal" above, which may result in a change of control of the Company. Nasdaq guidance suggests that a change of control occurs when, as a result of the issuance, an investor or a group would own, or have the right to acquire, 20% or more of the outstanding shares of common stock or voting power and such ownership or voting power would be the largest ownership position.

The address for Eshelman Ventures, LLC is 319 North 3rd Street, Suite 301, Wilmington, North Carolina 28401.

(5) Includes 39,671 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022 and 474,000 warrant shares issuable upon exercise of the Pre-Funder Warrant.

(6) Includes 207,959 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(7) Includes an aggregate of 38,558 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(8) Includes an aggregate of 50,925 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(9) Includes an aggregate of 179,112 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(10) Includes an aggregate of 258,223 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(11) Includes an aggregate of 0 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(12) Includes an aggregate of 25,598 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(13) Includes an aggregate of 25,598 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(14) Includes an aggregate of 25,598 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022.

(15) Consists of 5,810,723 shares held by the directors and current executive officers, an aggregate of 851,242 shares issuable pursuant to stock options exercisable within 60 days of March 25, 2022 and 474,000 warrant shares issuable upon exercise of the Pre-Funder Warrant.

The following table presents information as of December 31, 2021 with respect to shares of our common stock that may be issued under our existing equity compensation plans, including the 2014 Plan, the 2019 Plan and the 2014 Employee Stock Purchase Plan. We do not maintain any equity incentive plans that have not been approved by shareholders.

Equity Compensation Plan Information

Plan Category	Number of securities to be issued upon exercise of outstanding options (a)	Weighted-average exercise price of outstanding options (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity Compensation Plan approved by security holders (1)			
2014 Equity Incentive Plan	159,664	$ 5.41	—
2014 Employee Stock Purchase Plan	—	—	273,681
2019 Equity Incentive Plan	1,355,840	$ 6.18	1,857,990
Total	1,515,504	$ 6.10	2,131,671

(1) This table does not present information regarding equity awards under the Aravive Biologics, Inc. 2010 Equity Incentive Plan and the Aravive Biologics, Inc. 2017 Equity Incentive Plan that were assumed by us in connection with the Merger. As of December 31, 2021, an additional 923,749 shares of our common stock were subject to options outstanding that were assumed in the Merger.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

TRANSACTIONS WITH RELATED PERSONS

RELATED-PERSON TRANSACTIONS POLICY AND PROCEDURES

In 2014, we adopted a written Related-Person Transactions Policy that sets forth our policies and procedures regarding the identification, review, consideration and approval or ratification of "related-persons transactions." For purposes of our policy only, a "related-person transaction" is a transaction, arrangement, or relationship (or any series of similar transactions, arrangements, or relationships) in which we and any "related person" are participants involving an amount that exceeds $100,000. Transactions involving compensation for services provided to us as an employee, director, consultant, or similar capacity by a related person are not covered by this policy. A related person is any executive officer, director, or more than 5% stockholder of our company, including any of their immediate family members, and any entity owned or controlled by such persons.

Under the policy, where a transaction has been identified as a related-person transaction, management must present information regarding the proposed related-person transaction to the Audit Committee (or, where Audit Committee approval would be inappropriate, to another independent body of the board of directors) for consideration and approval or ratification. The presentation must include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction and whether any alternative transactions were available. To identify related-person transactions in advance, we rely on information supplied by its executive officers, directors, and certain significant stockholders. In considering related-person transactions, the Audit Committee takes into account the relevant available facts and circumstances including, but not limited to (i) the risks, costs and benefits to us, (ii) the impact on a director's independence in the event the related person is a director, immediate family member of a director or an entity with which a director is affiliated, (iii) the terms of the transaction, (iv) the availability of other sources for comparable services or products and (v) the terms available to or from, as the case may be, unrelated third parties or to or from employees generally. In the event a director has an interest in the proposed transaction, the director must recuse himself or herself form the deliberations and approval. The policy requires that, in determining whether to approve, ratify or reject a related-person transaction, the Audit Committee consider, in light of known circumstances, whether the transaction is in, or is not inconsistent with, the best interests of us and our stockholders, as the Audit Committee determines in the good faith exercise of its discretion.

CERTAIN RELATED-PERSON TRANSACTIONS

The following is a summary of transactions since January 1, 2020 and all currently proposed transactions, to which we have been a participant, in which:

- the amounts exceeded or will exceed $120,000; and
- any of the directors, executive officers or holders of more than 5% of the respective capital stock, or any member of the immediate family of the foregoing persons, had or will have a direct or indirect material interest other than as set forth under "Executive Compensation" and "Director Compensation".

On April 8, 2020, pursuant to the terms of an Investment Agreement that we entered into with, Eshelman Ventures, LLC, a North Carolina limited liability company (the "Investor"), and, solely for purposes of certain provisions of the Investment Agreement, Fredric N. Eshelman, Eshelman Ventures, LLC purchased 931,098 shares of our common stock, (the "Purchased Shares"), for an aggregate purchase price of approximately $5,000,000. We agreed to use commercially reasonable efforts to file and cause to be declared effective prior to the six-month anniversary of the acquisition date a shelf registration statement on Form S-3 with respect to those Purchased Shares that are not otherwise registered under the U.S. Securities Act of 1933, as amended (the "Securities Act"), which registration statement was declared effective on July 13, 2020.

On December 31, 2020, we entered into a consulting agreement (the "Consulting Agreement") with Mr. Tabibiazar pursuant to which he has agreed to provide consulting services to us from time to time. The Consulting Agreement has a one-year term and automatically renews for successive one-year periods unless sooner terminated (the "Term"). The Consulting Agreement may be terminated by either party at any time without cause upon fifteen (15) days' written notice. As compensation, we agreed to amend the terms of Mr. Tabibiazar's option grants issued under our equity compensation plan(s) to extend the exercisability date of each option until the earlier of (1) one year following the termination by either Mr. Tabibiazar or us of the Consulting Agreement and (2) the latest date on which the options expire as set forth in the applicable award agreements. In addition, Mr. Tabibiazar has agreed not to (A) offer for sale, sell, pledge or otherwise transfer or dispose of any our securities, or securities convertible into or exercisable or exchangeable for shares of our common stock, (B) to enter into any swap or other derivate transaction that transfers any of the economic benefits or risks of ownership of shares of our common stock or (C) to publicly disclose his intention to do any of the foregoing until April 5, 2021.

On February 12, 2021, we entered into the Purchase Agreement, with Eshelman Ventures relating to the issuance and sale of 2,875,000 shares of the Company's common stock at a price per share of $7.29. The Offering closed on February 18, 2021 and we received aggregate gross proceeds from the Offering of approximately $21.0 million.

In January 2022, we entered into and closed an investment agreement with Eshelman Ventures relating to the issuance of a pre-funded warrant to purchase up to 4,545,455 shares of the Company's common stock, par value $0.0001 per share, at a price of $2.20 per share, which was the consolidated closing bid price of our common stock on the Nasdaq on December 31, 2021, for an aggregate purchase price of $10 million.

In March 2022, we entered into a securities purchase agreement with Eshelman Ventures pursuant to which we issued to Eshelman Ventures, in a registered direct offering priced at-the-market consistent with the rules of the Nasdaq Stock Market (i) 860,216 shares of our common stock, $0.0001 par value per share, and (ii) five-year warrants to purchase up to 860,216 additional shares of our common stock. The combined purchase price of each share of common stock and accompanying warrant was $2.325 per share. The exercise price of the accompanying warrants is $2.20, which was the consolidated closing bid price of our common stock on the Nasdaq on December 31, 2021. The aggregate proceeds from this securities purchase agreement with Eshelman Ventures was $2 million.

Since January 1, 2020, there have been no transactions other than the transactions described above, the compensation arrangements which are described under “Executive Compensation” and “Director Compensation” and the entry into our standard form of indemnification agreements described below with directors and executive officers, and there are no proposed transactions, in which the amount involved exceeds $120,000 to which we or any of any of our subsidiaries was (or is to be) a party and in which any director, director nominee, executive officer, holder of more than 5% of our capital stock, 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.

Indemnification Agreements

Our amended and restated certificate of incorporation contains provisions limiting the liability of directors and our amended and restated bylaws provide that we will indemnify each of our directors to the fullest extent permitted under Delaware law. Our amended and restated certificate of incorporation and amended and restated bylaws also provide the board of directors with discretion to indemnify our officers and employees when determined appropriate by the board. In addition, we have entered and expect to continue to enter into agreements to indemnify our directors and executive officers.

Independence of the Board of Directors

The board of directors undertook a review of the independence of the members of the board of directors and considered whether any director has a material relationship with our company that could compromise his or her ability to exercise independent judgment in carrying out his or her responsibilities. Based upon information requested from and provided by each director concerning their background, employment and affiliations, including family relationships, the board of directors has determined that all of our current directors, except Dr. McIntyre, due to her position as Chief Executive Officer of our company, is “independent” as that term is defined under the rules of Nasdaq. As a result, Dr. Eshelman, Dr. Giaccia, Mr. Rogers, and Mr. Zhang are deemed to be “independent” as that term is defined under the rules of Nasdaq. See the section of this Annual Report on Form 10-K entitled “Item 10. Directors, Executive Officers and Corporate Governance— Independence of the Board of Directors.”

Item 14. Principal Accounting Fees and Services.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table sets forth the aggregate fees incurred by us for audit and other services rendered by BDO USA, LLP ("BDO") during the year ended December 31, 2021 and December 31, 2020:

	Fiscal Year Ended	
	2021	2020
	(in thousands)	
Audit Fees(1)	$ 301	$ 247
Audit-Related Fees(2)	—	—
Tax Fees(3)	44	50
All Other Fees(4)	—	—
Total Fees	$ 345	$ 297

(1) Audit fees consist of fees billed for professional services rendered for the audit of our consolidated annual financial statements, review of the interim consolidated financial statements, the issuance of consent and comfort letters in connection with registration statement filings with the SEC and all services that are normally provided by the accounting firm in connection with statutory and regulatory filings or engagements.
(2) None.
(3) Tax fees include fees billed in the fiscal periods shown for professional services for tax compliance.
(4) None.

All fees described above were pre-approved by the Audit Committee.

Pre-Approval Policies and Procedures

The Audit Committee has adopted a policy and procedures for the pre-approval of audit and non-audit services rendered by our independent registered public accounting firm. The policy generally pre-approves specified services in the defined categories of audit services, audit-related services and tax services up to specified amounts. Pre-approval may also be given as part of the Audit Committee's approval of the scope of the engagement of the independent auditor or on an individual, explicit, case-by-case basis before the independent auditor is engaged to provide each service. The pre-approval of services may be delegated to one or more of the Audit Committee's members, but the decision must be reported to the full Audit Committee at its next scheduled meeting.

The Audit Committee has determined that the rendering of non-audit services by BDO in 2021 and 2020 is compatible with maintaining the principal accountant's independence.

PART IV

Item 15. Exhibits, Financial Statement Schedule.

Consolidated Financial Statements:

See Index to Consolidated Financial Statements at page F-1.

Financial Statement Schedule:

All schedules are omitted because they are not required or the required information is included in the consolidated financial statements or notes thereto.

Exhibits:

The exhibits listed in the accompanying index to exhibits are filed as part of, or incorporated by reference into, the 2021 Annual Report on Form 10-K.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm (BDO USA, LLP; Raleigh, NC; PCAOB ID #243) F-2

Consolidated Balance Sheets F-4

Consolidated Statements of Operations F-5

Consolidated Statements of Stockholders' Equity F-6

Consolidated Statements of Cash Flows F-7

Notes to Consolidated Financial Statements F-8

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Shareholders and Board of Directors
Aravive, Inc.
Houston, Texas

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Aravive, Inc. (the "Company") as of December 31, 2021 and 2020, the related consolidated statements of operations, stockholders' equity, and cash flows for the years then ended, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021 and 2020, and the results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the consolidated financial statements, the Company has suffered recurring losses from operations and has not generated significant revenue or positive cash flows from operations. These factors raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates 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 a critical audit matter 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 matter below, providing separate opinions on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue Recognition – Collaboration and License Agreement

As described in Note 5 to the Company's consolidated financial statements, on November 6, 2020 the Company entered into a Collaboration and License Agreement (the "Agreement") which resulted in recognition of revenue of $4.2 million related to the license to intellectual property and $3.2 million related to research and development services, which also includes amounts recognized associated with providing clinical supplies, for the year ended December 31, 2021. The Company recognizes revenue related to the research and development services based on the pattern in which the Company performs the services pursuant to the current development plan, which is generally determined to be the amount of incurred costs as a percentage of total expected costs associated with the service portion of the Agreement.

We have identified management's estimate of the total expected costs associated with the service portion of the Agreement as a critical audit matter. Estimation of the total expected costs requires management to make judgments with respect to future development costs, including costs related to performing the product candidate's clinical trial. Auditing management's estimates with respect to the total expected costs required increased auditor judgment due to the inherent uncertainty involved in the clinical development process.

The primary procedures we performed to address this critical audit matter included:

- Assessing management's estimate of the total expected costs through a review of third-party evidence supporting estimated costs of the clinical trial based on a certain number of patients and through discussions with the Company's clinical development professionals knowledgeable about the current progression of the drug candidates through clinical development.

- Reviewing meeting minutes and development updates from board of director meetings as well as communications with manufacturing partners and clinical research organizations for consistency with management's estimate.

- Examining any information contradictory to management's estimate to determine the completeness of considerations made by management.

/s/ BDO USA, LLP

We have served as the Company's auditor since 2018.

Raleigh, North Carolina

March 31, 2022

ARAVIVE, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except share and per share amounts)

	December 31, 2021	December 31, 2020
Assets		
Current Assets		
Cash and cash equivalents	$ 59,424	$ 60,541
Prepaid expenses and other current assets	3,321	1,148
Total current assets	62,745	61,689
Restricted cash	2,431	2,430
Property and equipment, net	400	526
Operating lease right-of-use assets	2,207	2,958
Intangible asset, net	-	97
Other assets	4	10
Total assets	$ 67,787	$ 67,710
Liabilities and stockholders' equity		
Current liabilities		
Accounts payable	$ 2,657	$ 2,500
Accrued liabilities	8,416	2,323
Operating lease obligation, current portion	2,297	2,086
Current portion of deferred revenue	4,571	2,552
Total current liabilities	17,941	9,461
Deferred revenue, net of current portion	3,548	3,763
Operating lease obligation, net of current portion	4,076	6,431
Total liabilities	25,565	19,655
Commitments and contingencies (Note 7)		
Stockholders' equity		
Common stock, $0.0001 par value, 100,000,000 shares authorized at December 31, 2021 and December 31, 2020; 21,039,594 and 16,481,099 shares issued and outstanding at December 31, 2021 and December 31, 2020, respectively	2	2
Additional paid-in capital	582,025	548,707
Accumulated deficit	(539,805)	(500,654)
Total stockholders' equity	42,222	48,055
Total liabilities and stockholders’ equity	$ 67,787	$ 67,710

The accompanying notes are an integral part of these consolidated financial statements.

ARAVIVE, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)

	Year Ended December 31,	
	2021	**2020**
Revenue		
Collaboration revenue	$ 7,442	$ 5,685
Total revenue	7,442	5,685
Operating expenses		
Research and development	37,541	17,620
General and administrative	10,550	13,065
Loss on impairment of long-lived assets	—	5,784
Total operating expenses	48,091	36,469
Loss from operations	(40,649)	(30,784)
Interest income	37	255
Other income (expense), net	1,461	(14)
Net loss	$ (39,151)	$ (30,543)
Net loss per share - basic and diluted	$ (1.95)	$ (1.93)
Weighted-average common shares used to compute basic and diluted net loss per share	20,070	15,790

The accompanying notes are an integral part of these consolidated financial statements.

ARAVIVE, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands, except share and per share amounts)

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at January 1, 2020	15,001,795	$ 2	$ 539,158	$ (470,111)	$ 69,049
Issuance of common stock upon exercise of options	114,515	—	315	—	315
Issuance of common stock under employee benefit plans	56,291	—	80	—	80
Issuance of common stock in private placement, net of issuance costs of $78	931,098	—	4,922	—	4,922
Issuance of common stock, net of issuance costs of $94	377,400	—	2,266	—	2,266
Stock-based compensation	—	—	1,966	—	1,966
Net loss	—	—	—	(30,543)	(30,543)
Balances at December 31, 2020	16,481,099	2	548,707	(500,654)	48,055
Issuance of common stock upon exercise of options	219,109	—	308	—	308
Issuance of common stock under employee benefit plans	31,759	—	120	—	120
Issuance of common stock in direct offering, net of issuance costs of $98	2,875,000	—	20,866	—	20,866
Issuance of common stock in at the market offering, net of issuance costs of $250	1,432,627	—	9,767	—	9,767
Stock-based compensation	—	—	2,257	—	2,257
Net loss	—	—	—	(39,151)	(39,151)
Balances at December 31, 2021	21,039,594	$ 2	$ 582,025	$ (539,805)	$ 42,222

The accompanying notes are an integral part of these consolidated financial statements.

ARAVIVE, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended December 31,	
	2021	**2020**
Cash flows from operating activities		
Net loss	$ (39,151)	$ (30,543)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	974	1,829
Impairment of long-lived assets	—	5,784
Stock-based compensation expense	2,257	1,966
Write-off of lease receivable/prepaid commission assets	—	1,383
Changes in assets and liabilities		
Prepaid expenses and other assets	(2,167)	1,299
Accounts payable	157	1,422
Deferred revenue	1,804	6,315
Accrued and other liabilities	3,949	(1,624)
Net cash used in operating activities	(32,177)	(12,169)
Cash flows from financing activities		
Proceeds from issuance of common stock in connection with employee benefit plans	120	80
Proceeds from issuance of common stock in connection with exercise of options	308	315
Proceeds from issuance of common stock in direct offering, net of issuance costs	20,866	—
Proceeds from issuance of common stock in private placement, net of issuance costs of $78	—	4,922
Proceeds from issuance of common stock in at the market offering	9,767	2,266
Net cash provided by financing activities	31,061	7,583
Net change in cash, cash equivalents, and restricted cash	(1,116)	(4,586)
Cash, cash equivalents, and restricted cash at beginning of period	62,971	67,557
Cash, cash equivalents, and restricted cash at end of period	$ 61,855	$ 62,971
Supplemental disclosure of noncash items		
Right-of-use asset acquired through operating lease	—	470

The accompanying notes are an integral part of these consolidated financial statements.

ARAVIVE, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Formation and Business of the Company

Aravive, Inc. (“Aravive” or the “Company”) was incorporated on December 10, 2008 in the State of Delaware. Aravive Biologics, Inc. (“Aravive Biologics”) our wholly owned subsidiary was incorporated in 2007. Aravive is a clinical-stage biopharmaceutical company developing treatments designed to halt the progression of life-threatening diseases, including cancer and fibrosis.

The Company’s lead product candidate, batiraxcept (formerly AVB-500), is an ultrahigh-affinity, decoy protein that targets the GAS6-AXL signaling pathway. By capturing serum GAS6, batiraxcept starves the AXL pathway of its signal, potentially halting the biological programming that promotes disease progression. AXL receptor signaling plays an important role in multiple types of malignancies by promoting metastasis, cancer cell survival, resistance to treatments, and immune suppression.

The Company’s current development program benefits from the availability of a proprietary serum-based biomarker that accelerated batiraxcept drug development by allowing the Company to select a pharmacologically active dose and may potentially identify the cancer patients that have the best chance of responding to batiraxcept.

In July 2016, Aravive Biologics was approved for a $20.0 million Product Development Award from the Cancer Prevention and Research Institute of Texas (“CPRIT Grant”). The CPRIT Grant was expected to allow Aravive Biologics to develop the product candidate referenced above through clinical trials. The CPRIT Grant was effective as of June 1, 2016 and terminated on November 30, 2019. The Company has received all $20 million of the grant proceeds and have incurred all of the grant award proceeds by the termination date. Aravive Biologics’ royalty and other obligations, including its obligation to repay the disbursed grant proceeds under certain circumstances, survive the termination of the agreement. The CPRIT Grant was subject to customary CPRIT funding conditions including a matching funds requirement where Aravive Biologics matched 50% of funding from the CPRIT Grant. Consequently, Aravive Biologics was required to raise $10.0 million in matching funds over the three-year project. Aravive Biologics raised all its required $10.0 million in matching funds.

Aravive Biologics’ award from CPRIT requires it to pay CPRIT a portion of its revenues from sales of certain products, or received from its licensees or sublicensees, at tiered percentages of revenue in the low- to mid-single digits until the aggregate amount of such payments equals 400% of the grant award proceeds, and thereafter at a rate of less than one percent for as long as Aravive Biologics maintains government exclusivity. In addition, the grant contract also contains a provision that provides for repayment to CPRIT of the full amount of the grant proceeds under certain specified circumstances involving relocation of Aravive Biologics’ principal place of business outside Texas.

In the Company’s completed Phase 1 clinical trial in healthy volunteers with its lead product candidate, batiraxcept, the Company demonstrated proof of mechanism for batiraxcept in neutralizing GAS6. Importantly, batiraxcept had a favorable safety profile preclinically and in the first in human trial and Phase 1b clinical trial in cancer patients.

In August 2018, the U.S. Food and Drug Administration (“FDA”) designated as a Fast Track development program the investigation of batiraxcept for platinum-resistant recurrent ovarian cancer ("PROC").

In December 2018, the Company initiated a Phase 1b clinical trial of batiraxcept combined with standard of care therapies in patients with platinum resistant ovarian cancer, or PROC, for which it reported results in July 2020.

In April 2020, the Company entered into a license and collaboration agreement with WuXi Biologics (Hong Kong) Limited, the objective of which is to identify and develop novel high-affinity bispecific antibodies against CCN2, also known as connective tissue growth factor ("CTGF"), implicated in cancer and fibrosis, and identified from a similar target discovery screen that identified the significance of the AXL/GAS6 pathway in cancer. The goal is to generate a best-in-class therapeutic targeting desmoplasia and tumor growth for initial investigation in the clinic in 2023.

In November 2020, the Company entered into a collaboration and license agreement with 3D Medicines Inc. ("3D Medicines") (the “Agreement or the 3D Medicine Agreement”), whereby the Company granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance for the diagnosis, treatment or prevention of human oncological diseases, in mainland China, Taiwan, Hong Kong and Macau (the "Territory") for an upfront cash payment of $12 million. During the second quarter of 2021, the Company received a $6 million development milestone from 3D Medicines, for completing our first clinical milestone with 3D Medicines, dosing the first patient in its Phase 3 trial of batiraxcept in PROC.. Based upon this event, the Company received a $6 million cash payment during the second quarter of 2021. In August 2021, the Company received a $3 million development milestone from 3D Medicines based on the Center for Drug Evaluation ("CDE") of the China National Medical Products Administration ("NMPA") approval of the Investigational New Drug application ("IND") submitted by 3D Medicines to participate in the Company’s international batiraxcept Phase 3 PROC clinical trial.

As the Company advances its clinical programs, the Company is in close contact with its clinical research organizations ("CROs") and clinical sites and is continually assessing the impact of COVID-19 on its planned trials and current timelines and costs. The Company has experienced delays in patient enrollment due to the COVID-19 pandemic. If the COVID-19 pandemic continues and persists for an extended period of time or increases in severity, the Company could experience significant disruptions to its clinical development timelines and, if the Company experiences delays in patient enrollment and deems it necessary or advisable to improve patient recruitment by, among other things, opening additional clinical sites, the Company could incur increased clinical program expenses. Any such disruptions or delays would, and any such increased clinical program expenses could, adversely affect the Company’s business, financial condition, results of operations and growth prospects.

As consideration for the rights granted as part of a license agreement with Stanford University, Aravive Biologics is obligated to pay yearly license fees and milestone payments, and a royalty based on net sales of products covered by the patent-related rights. More specifically, Aravive Biologics is obligated to pay Stanford University (i) annual license payments (ii) milestone payments of up to an aggregate of $1,000,000 upon achievement of clinical and regulatory milestones, and (iii) royalties equal to a percentage (in the low single digits) of net sales of licensed products; provided that the annual license payments made will offset (and be credited against) any royalties due in such license year. In the event of a sublicense to a third party of any rights based on the patents that are solely owned by Stanford University, Aravive Biologics is obligated to pay royalties to Stanford University equal to a percentage of what Aravive Biologics would have been required to pay to Stanford University had it sold the products under sublicense itself. In addition, in such event it is required to pay to Stanford University a percent of sublicensing income. In the event of a termination, Aravive Biologics will be obligated to pay all amounts that accrued prior to such termination.

2. Summary of Significant Accounting Policies

Basis of Presentation and Use of Estimates

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). The preparation of the accompanying consolidated financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

The accompanying financial statements are consolidated for the years ended December 31, 2021 and 2020 and includes the accounts of Aravive, Inc. and its wholly-owned subsidiary Aravive Biologics. All intercompany accounts and transactions have been eliminated. The U.S. dollar is the functional currency for the Company's subsidiary and consolidated operations.

Going Concern Uncertainty

Since inception, the Company has incurred net losses and negative cash flows from operations. At December 31, 2021, the Company had an accumulated deficit of $539.8 million and working capital of $44.8 million. Since inception, the Company has incurred net losses and negative cash flows from operations. The Company expects to continue to incur losses from costs related to the development of batiraxcept and related administrative activities for the foreseeable future. These factors raised substantial doubt about the Company's ability to continue as a going concern. The accompanying consolidated financial statements do not include any adjustments relating to the recoverability of the recorded assets or the classification of liabilities that may be necessary should the Company be unable to continue as a going concern. As of December 31, 2021, the Company had a cash and cash equivalents balance of $59.4 million consisting of cash and investments in highly liquid U.S. money market funds. The Company intends to seek additional capital through equity and/or debt financings, collaborative or other funding arrangements with partners or through other sources of financing to fulfill its operating and capital requirement for the next 12 months to advance its clinical development program to later stages of development and potentially commercialize its clinical product candidate batiraxcept. Although management has been successful in raising capital in the past, there can be no assurance that the Company will be successful or that any needed financing will be available in the future at terms acceptable to the Company. If the Company is unable to raise additional funds when needed, the Company may be required to delay, reduce, or terminate some or all of its development programs and clinical trials. The Company may also be required to sell or license to others technologies or clinical product candidates or programs that it would prefer to develop and commercialize itself.

Segments

The Company operates in one segment. Management uses one measurement of profitability and does not segregate its business for internal reporting. All long-lived assets are maintained in the United States of America.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash and cash equivalents. All of the Company's cash and cash equivalents are held at several financial institutions that management believes are of high credit quality. Such deposits may exceed federally insured limits.

Risk and Uncertainties

The Company's future results of operations involve a number of risks and uncertainties. Factors that could affect the Company's future operating results and cause actual results to vary materially from expectations include, but are not limited to, uncertainty of results of clinical trials and reaching milestones, uncertainty of regulatory approval of the Company's potential drug candidates, uncertainty of market acceptance of the Company's products, competition from substitute products and larger companies, securing and protecting proprietary technology, strategic relationships and dependence on key individuals and sole source suppliers.

Products developed by the Company require clearances from the U.S. Food and Drug Administration ("FDA"), the Pharmaceuticals Medicines and Devices Agency ("PMDA"), or other international regulatory agencies prior to commercial sales. There can be no assurance that the products will receive the necessary clearances. If the Company is denied clearance, clearance is delayed or the Company is unable to maintain clearance, it could have a material adverse impact on the Company.

The Company expects to incur substantial operating losses for the next several years and will need to obtain additional financing in order to launch and commercialize any product candidates for which it receives regulatory approval.

The Company relies on third-party manufacturers to purchase from their third-party vendors the materials necessary to produce product candidates and manufacture product candidates for clinical studies. The Company also depends on third-party suppliers for key materials and services used in research and development, as well as manufacturing processes, and are subject to certain risks related to the loss of these third-party suppliers or their inability to supply adequate materials and services. The Company does not control the manufacturing processes of the contract development and manufacturing organizations, or CDMOs, with whom it contracts and is dependent on these third parties for the production of its therapeutic candidates in accordance with relevant regulations (such as current Good Manufacturing Practices, or cGMP, which includes, among other things, quality control, quality assurance and the maintenance of records and documentation. In addition, the Company is dependent upon third-party suppliers for the materials needed to construct its cGMP facility as well as the equipment that will be needed to run the facility.

Cash and Cash Equivalents, Restricted Cash

The Company considers all highly liquid investments purchased with an original maturity of three months or less to be cash equivalents. At December 31, 2021 and 2020 the Company's cash and cash equivalents were held in multiple institutions within the United States and included deposits in money market funds which were unrestricted as to withdrawal or use. Restricted cash consists of a letter of credit to secure the Company's obligations under the right-of-use lease.

Property and Equipment, Net

Property and equipment are stated at cost and depreciated using the straight-line method over the estimated useful lives of the assets, generally between three and five years. Leasehold improvements are amortized on a straight-line basis over the lesser of their useful life or the term of the lease. Maintenance and repairs are charged to expense as incurred, and improvements are capitalized. When assets are retired or otherwise disposed of, the cost and accumulated depreciation are removed from the consolidated balance sheets and any resulting gain or loss is reflected in operations in the period realized.

Leases

The Company leases all of its office space in conducting its business. At inception, the Company determines whether an agreement represents a lease and at commencement the Company evaluates each lease agreement to determine whether the lease is an operating or financing lease.

The Company records an operating lease ROU asset and an operating lease obligation on the consolidated balance sheet when entering into a lease. ROU assets represent the Company's ROU of the underlying asset for the lease term and the lease obligation represents the Company's commitment to make the lease payments arising from the lease. Lease obligations are recognized at the commencement date based on the present value of remaining lease payments over the lease term and ROU assets are calculated as the lease liability, adjusted by unamortized initial direct costs, unamortized lease incentives received, cumulative deferred or prepaid lease payments, and accumulated impairment losses. As the Company's leases do not provide an implicit rate, the Company has used an estimated incremental borrowing rate based on the information available at the lease inception date in determining the present value of lease payments. The lease term may include options to extend or terminate the lease and the Company includes renewal options in its calculation of the estimated lease term when it is reasonably certain that the Company will exercise that option. Operating lease expense is recognized on a straight-line basis over the lease term, subject to any changes in the lease or expectations regarding the terms. Variable lease costs such as common area costs and property taxes are expensed as incurred. Variable lease costs and short-term lease payments not included in the lease liability are classified within operating activities in the consolidated statements of cash flows. For all lease agreements, the Company has combined lease and nonlease components. Leases with an initial term of 12 months or less are not recorded on the consolidated balance sheet. These expenses are recognized within operating expenses in the consolidated statements of operations.

Impairment of Long-Lived Assets

The Company reviews property and equipment for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability is measured by the comparison of the carrying amount to the future net cash flows which the assets are expected to generate. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value (i.e., determined through estimating projected discounted future net cash flows or other acceptable methods of determining fair value) arising from the asset. There were no such impairments of long-lived assets during the year ended December 31, 2021.

The Company accounted for the sublease with EVA Automation, Inc. ("EVA") as an operating lease and reviewed the ROU asset recorded associated with the sublease for impairment whenever events or changes in circumstances indicate that the carrying amount of the ROU asset may not be recoverable in accordance with ASC 360-10. Recoverability is measured if the lease cost for the term of the sublease exceeds the anticipated sublease income for the same period on an undiscounted basis and the Company shall treat this circumstance as an indicator that the carrying amount of the ROU asset may not be recoverable.

At the end of the first quarter ended March 31, 2020, the Company was informed by EVA, its sublease tenant at the time, that EVA would not be in a position to pay future sublease rental payments and intended to exit the sublease. Given the uncertainty of the sublease tenant's ability to pay the remaining sublease rental payments, the Company determined the carrying amounts of the ROU asset and leasehold improvements associated with the 1020 Marsh Facility may not be recoverable. Accordingly, the Company performed a recoverability test, using an undiscounted cash flow analysis as of March 31, 2020. Based on the undiscounted cash flow analysis, the Company determined that the ROU and leasehold improvement assets had net carrying values that exceeded their estimated undiscounted future cash flows. The Company then measured the impairment of the asset group using a discounted cash flow analysis of the estimated future sublease payments to be received from an expected sublessee. In determining the fair value of the asset group, the Company utilized current real estate market rates, time needed to sublet the building and estimated a discount rate of 9.5%. As a result of the impairment analysis, the Company recognized an impairment charge against its ROU asset of and leasehold improvement assets of $2.4 million and $0.5 million, respectively, for the quarter ended March 31, 2020.

At the end of the third quarter ended September 30, 2020, the Company continued to evaluate the estimates used in the valuation used in the first quarter of 2020. Given the continued uncertainty due to the COVID-19 shut down and the significant negative impact to the real estate market as of the end of the third quarter, the Company determined the carrying amounts of the ROU asset and leasehold improvements associated with the 1020 Marsh Facility may not be recoverable. Accordingly, the Company performed a recoverability test, using an undiscounted cash flow analysis as of September 30, 2020. Based on the undiscounted cash flow analysis, the Company determined that the ROU and leasehold improvement assets had net carrying values that exceeded their estimated undiscounted future cash flows. The Company then measured the impairment of the asset group using a discounted cash flow analysis of the estimated future sublease payments to be received from an expected sublessee as the Company is currently marketing the 1020 Marsh Facility location for subletting. In determining the fair value of the asset group, the Company utilized current real estate market estimated rates, time needed to sublet the building and estimated a discount rate of 9.5%. As a result of the impairment analysis, the Company recognized an impairment charge against its ROU asset and leasehold improvement assets of $2.4 million and $0.5 million, respectively, for the quarter ended September 30, 2020.

A total of $5.8 million was reported as an impairment loss on the Company's long-lived asset balances within the statement of operations for the year ended December 31, 2020.

In June 2021, the Company entered into a sublease arrangement with Grail, Inc. ("Subtenant") to occupy all of the approximately 34,464 rentable square feet of office space at the 1020 Marsh Facility. The landlord consent was received and final agreement was signed in July 2021. The term of the sublease commenced on August 1, 2021 and will continue through October 31, 2024. Aggregate base rent due to the Company under the sublease agreement is approximately $7.65 million.

Fair Value of Financial Instruments

The carrying value of the Company's cash and cash equivalents, restricted cash, accounts payable and accrued liabilities approximate fair value due to the short-term nature of these items.

Fair value is defined as the exchange price that would be received for an asset or an exit price paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs.

The fair value hierarchy defines a three-level valuation hierarchy for disclosure of fair value measurements as follows:

Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities;

Level 2 Inputs other than quoted prices included within Level 1 that are observable, unadjusted quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the related assets or liabilities; and

Level 3 Unobservable inputs that are supported by little or no market activity for the related assets or liabilities.

The categorization of a financial instrument within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The Company's financial instruments consist of Level 1 assets as of December 31, 2021 and 2020. Level 1 securities are comprised of highly liquid money market funds.

Preclinical and Clinical Trial Accruals

The Company's clinical trial accruals are based on estimates of patient enrollment and related costs at clinical investigator sites as well as estimates for the services received and efforts expended pursuant to contracts with multiple research institutions and CROs that conduct and manage clinical trials on the Company's behalf.

The Company estimates preclinical and clinical trial expenses based on the services performed, pursuant to contracts with research institutions and CROs that conduct and manage preclinical studies and clinical trials on its behalf. In accruing service fees, the Company estimates the time period over which services will be performed and the level of patient enrollment and activity expended in each period. If the actual timing of the performance of services or the level of effort varies from the estimate, the Company will adjust the accrual accordingly. Payments made to third parties under these arrangements in advance of the receipt of the related services are recorded as prepaid expenses until the services are rendered.

Research and Development

Research and development costs are charged to operations as incurred. Research and development costs include, but are not limited to, payroll and personnel expenses, laboratory supplies, consulting costs, external research and development expenses and allocated overhead, including rent, equipment depreciation, and utilities. Costs to acquire technologies to be used in research and development that have not reached technological feasibility and have no alternative future use are expensed to research and development costs when incurred.

Income Taxes

The Company accounts for income taxes under the asset and liability approach. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amounts expected to be realized.

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 is measured at the largest amount of benefit that is more than likely to be 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 judgment. Judgments concerning the recognition and measurement of a tax benefit might change as new information becomes available.

Stock-Based Compensation

For stock options granted to employees, the Company recognizes compensation expense for all stock-based awards based on the grant-date estimated fair value. The value of the portion of the award that is ultimately expected to vest is recognized as expense ratably over the requisite service period. The fair value of stock options is determined using the Black-Scholes option pricing model. The determination of fair value for stock-based awards on the date of grant using an option pricing model requires management to make certain assumptions regarding a number of complex and subjective variables.

Stock-based compensation expense related to stock options granted to nonemployees is recognized based on the fair value of the stock options, determined using the Black-Scholes option pricing model, as they are earned. The awards generally vest over the time period the Company expects to receive services from the nonemployee.

Net Loss per Share of Common Stock

Basic net loss per common share is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of common shares outstanding during the period, without consideration for potentially dilutive securities. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common shares and potentially dilutive securities outstanding for the period. For purposes of the diluted net loss per share calculation, stock options and restricted stock units are considered to be potentially dilutive securities. Because the Company has reported a net loss for the years ended December 31, 2021 and 2020, diluted net loss per common share is the same as basic net loss per common share for those periods.

Collaborative Arrangements

The Company records the elements of its collaboration agreements that represent joint operating activities in accordance with ASC Topic 808, *Collaborative Arrangements* (ASC 808). Accordingly, the elements of the collaboration agreements that represent activities in which both parties are active participants and to which both parties are exposed to the significant risks and rewards that are dependent on the commercial success of the activities are recorded as collaborative arrangements. The Company considers the guidance in ASC 606-10-15, Revenue from Contracts with Customers – Scope and Scope Exceptions, in determining the appropriate treatment for the transactions between the Company and its collaborative partner and the transactions between the Company and third parties. Generally, the classification of transactions under the collaborative arrangements is determined based on the nature and contractual terms of the arrangement along with the nature of the operations of the participants. Currently, we have one collaboration agreement with 3D Medicines, see Note 5 for further discussion.

Revenue Recognition

The Company's sole source of revenue for 2021 and 2020 has been generated through its collaboration and license agreement. The Company's collaboration and license agreements frequently contain multiple elements including (i) intellectual property licenses, and (ii) research and development services. Consideration received under these arrangements may include upfront payments, research and development funding, cost reimbursements, milestone payments, payments for product sales and royalty payments. The Company's customer includes 3D Medicines.

The Company follows ASC 606, *Revenue from Contracts with Customers* (ASC 606) for recognition of its collaboration and license agreements. Under ASC 606, revenue is recognized when a customer obtains control of promised goods or services. The amount of revenue recognized reflects the consideration that the Company expects to be entitled to receive in exchange for goods or services and excludes sales incentives and amounts collected on behalf of third parties. The Company analyzes the nature of these performance obligations in the context of individual agreements in order to assess the distinct performance obligations.

The Company applies the following five-step model to recognize revenue: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation.

i) Identify the contract with a customer. The Company considers the terms and conditions of its agreements to identify contracts within the scope of ASC 606. The Company concludes it has a contract with a customer when the contract is approved, each party's rights regarding the goods and services to be transferred can be identified, the payment terms for the goods and services can be identified, it has been determined that the customer has the ability and intent to pay and the contract has commercial substance. The Company uses judgment in determining the customer's ability and intent to pay, which is based upon factors including the customer's historical payment experience or, for new customers, credit and financial information pertaining to the customers.

ii) Identify the performance obligations in the contract. Performance obligations in the agreements are identified based on the goods and services that will be transferred to the customer that are both capable of being distinct, whereby the customer can benefit from the service either on its own or together with other resources that are readily available from third parties or from the Company, and are distinct in the context of the contract, whereby the transfer of the services is separately identifiable from other promises in the contract. The Company's performance obligations generally consist of intellectual property licenses and research and development services with respect to license and service agreements, and the manufacture and supply of product for product sales agreements.

iii) Determine the transaction price. The Company determines the transaction price based on the consideration to which the Company expects to be entitled in exchange for transferring goods and services to the customer. In determining the transaction price, any variable consideration would be considered, to the extent applicable, if, in the Company's judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. In accordance with the royalty exception under ASC 606 for licenses of intellectual property, the transaction price excludes future royalty payments to be received from the Company's customers. None of the Company's revenue generating contracts contain consideration payable to its customer or a significant financing component.

iv) Allocate the transaction price to performance obligations in the contract. If the contract contains a single performance obligation, the entire transaction price is allocated to that performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation based on a relative standalone selling price.

v) Recognize revenue when or as we satisfy a performance obligation. Revenue is recognized at the time the related performance obligation is satisfied by transferring the promised goods or services to a customer. The Company recognizes revenue when control of the goods or services is transferred to the customers for an amount that reflects the consideration that the Company expect to receive in exchange for those goods or services.

Performance Obligations.

The following is a general description of principal goods and services from which the Company generates revenue.

License to intellectual property

The Company generates revenue from licensing its intellectual property including know-how and development and commercialization rights. The license provides a customer with the right to further research, develop and commercialize internally-discovered or collaborated drug candidates, or the right to use batiraxcept to further research, develop and commercialize customer drug candidates. The consideration the Company receives is in the form of nonrefundable upfront consideration related to the functional intellectual property licenses and is recognized when the Company transfers such license to the customer unless the license is combined with other goods or services into one performance obligation, in which case the revenue is recognized over a period of time based on the estimated pattern in which the Company satisfies the combined performance obligation. The Company's licensing agreements are generally cancelable.

Research and development services

The Company generates revenue from research and development services it provides to its customers and primarily includes clinical trials, and assistance during regulatory approval application process. Revenue associated with these services is recognized based on the Company's estimate of total consideration to be received for such services and the pattern in which the Company perform the services. The pattern of performance is generally determined to be the amount of incurred costs related to the service portion of the contract with the customer as a percentage of total expected costs associated with the service portion of the contract.

Contracts with Multiple Performance Obligations.

Most of the Company's collaboration and license agreements with customers contain multiple promised goods or services. Based on the characteristics of the promised goods and services the Company analyzes whether they are separate or combined performance obligations. The transaction price is allocated to the separate performance obligations on a relative standalone selling price basis. The estimated standalone selling price is based on the adjusted market assessment approach including estimated present value of future cash flows and cost-plus margin approach, taking into consideration the type of services, estimates of hourly market rates, and stage of the development.

Variable Consideration.

The Company's contracts with customers primarily include two types of variable consideration: (i) development and regulatory milestone payments, which are due to the Company upon achievement of specific development and regulatory milestones and (ii) one-time sales-based payments and sales-based royalties associated with licensed intellectual property.

Due to uncertainty associated with achievement of the development and regulatory milestones, the related milestone payments are excluded from the contract consideration and the corresponding revenue is not recognized until the Company concludes it is probable that reversal of such milestone revenue will not occur. As part of the Company's evaluation of the constraint, the Company considers numerous factors, including whether the achievement of the milestone is outside of the Company's control, contingent upon regulatory approval or dependent on licensee efforts.

Product sales-based royalties under licensed intellectual property and one-time payments are accounted for under the royalty exception. The Company recognizes revenue for sales-based royalties under licensed intellectual property and one-time payments at the later of when the sales occur or the performance obligation is satisfied or partially satisfied.

The transaction price is reevaluated each reporting period and as uncertain events are resolved or other changes in circumstances occur.

Recent Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board, or FASB, or other standard setting bodies and adopted by us as of the specified effective date. Unless otherwise discussed, the impact of recently issued standards that are not yet effective is not expected to have a material impact on the Company's financial position or results of operations upon adoption.

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes (Topic 740)*: Simplifying the Accounting for Income Taxes. This guidance is intended to improve consistent application and simplify the accounting for income taxes. This ASU removes certain exceptions to the general principles in Topic 740 and clarifies and amends existing guidance. This standard is effective for annual reporting periods beginning after December 15, 2020, including interim reporting periods within those annual reporting periods, with early adoption permitted. The Company adopted this guidance as of January 1, 2021, the adoption did not have a material impact on the Company's consolidated financial statements.

In August 2020, the FASB issued ASU No. 2020-06, *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*. The ASU simplifies accounting for convertible instruments by removing major separation models required under current GAAP. Consequently, more convertible debt instruments will be reported as a single liability instrument with no separate accounting for embedded conversion features. The ASU removes certain settlement conditions that are required for equity contracts to qualify for the derivative scope exception, which will permit more equity contracts to qualify for it. The ASU also simplifies the diluted net income per share calculation in certain areas. The new guidance is effective for annual and interim periods beginning after December 15, 2021, and early adoption is permitted for fiscal years beginning after December 15, 2020, and interim periods within those fiscal years. The Company adopted this guidance as of January 1, 2021, the adoption did not have a material impact on the Company's consolidated financial statements.

3. Balance Sheet Components

Prepaid expenses and other current assets (in thousands)

	December 31,	
	2021	**2020**
Preclinical and clinical	$ 3,288	$ 870
Clinical research organization receivable	—	262
Lease receivable	33	—
Other	—	16
Total	$ 3,321	$ 1,148

Property and equipment, net (in thousands)

	December 31,	
	2021	**2020**
Equipment and furniture	$ 1,430	$ 1,416
Buildings, leasehold and building improvements	2,673	2,673
	4,103	4,089
Less: Accumulated depreciation and amortization	(2,699)	(2,559)
Accumulated impairment loss	(1,004)	(1,004)
Property and equipment, net	$ 400	$ 526

During the year ended December 31, 2020, the Company determined leasehold improvements were impaired as described in Note 2. Depreciation expense was approximately $0.1 million and $0.3 million for the years ended December 31, 2021 and 2020, respectively.

Accrued liabilities (in thousands)

	December 31,	
	2021	**2020**
Payroll and related	$ 1,397	$ 1,052
Preclinical and clinical	6,727	707
Prepaid sublease	227	—
Professional services	50	169
Other	15	395
Total	$ 8,416	$ 2,323

4. Fair Value Measurements

The Company's financial instruments consist principally of cash and cash equivalents, prepaid expenses, accounts payable and accrued liabilities. The remaining financial instruments are reported on the Company's consolidated balance sheets at amounts that approximate current fair value. The following table sets forth the Company's financial instruments that were measured at fair value on a recurring basis by level within the fair value hierarchy (in thousands):

	Fair Value Measurements at December 31, 2021	
	Total	Level 1
Assets		
Money market funds	$ 49,217	$ 49,217

	Fair Value Measurements at December 31, 2020	
	Total	Level 1
Assets		-
Money market funds	$ 49,207	$ 49,207

The Company recognizes transfers between levels of the fair value hierarchy as of the end of the reporting period. There were no transfers within the hierarchy during the years ended December 31, 2021 and 2020.

Nonrecurring fair value measurements

As disclosed in Note 2, the Company recorded an impairment charge of approximately $5.8 million related to right-of-use and leasehold improvement assets. This impairment charge was derived using Level 3 inputs and the fair value of the long-lived assets was derived by using a discounted cash flow analysis of the 1020 Marsh Facility. In determining the fair value of the asset group, the Company utilized current real estate market estimated rates, time needed to sublet the building and estimated a discount rate of 9.5%.

5. Collaboration and License Agreement

On November 6, 2020, the Company entered into the 3D Medicines Agreement, whereby the Company granted 3D Medicines an exclusive license to develop and commercialize products that contain batiraxcept as the sole drug substance, for the diagnosis, treatment or prevention of human oncological diseases, in the Territory.

Under the terms of the Agreement, the Company was paid $21 million (inclusive of $9 million in milestone payments) and is eligible to receive from 3D Medicines cash payments of up to an aggregate of $207 million (inclusive of $9 million in milestone payments) in clinical development, regulatory and commercial milestone payments. There can be no guarantee that any additional milestones will in fact be met. The Company is obligated to make certain payments to The Board of Trustees of the Stanford University based on certain amounts received from 3D Medicines under the Agreement pursuant to the existing license agreement by and between the Company and Stanford, dated January 25, 2012, and as amended to date.

The Company will also be entitled to receive tiered royalties ranging from low double digits to mid-teens on sales in the Territory, if any, of products containing batiraxcept. Royalties are payable with respect to each jurisdiction in the Territory until the latest to occur of: (i) the last-to-expire of specified patent rights in such jurisdiction in the Territory; or (ii) ten (10) years after the first commercial sale of a product in such jurisdiction in the Territory. In addition, royalties payable under the Agreement will be subject to reduction on account of generic competition under certain specified conditions, with any such reductions capped at certain percentages of the amounts otherwise payable during the applicable royalty payment period.

Under the terms and conditions of the Agreement, 3D Medicines will be solely responsible for the development and commercialization of licensed products in the Territory.

If either the Company or 3D Medicines materially breaches the Agreement and does not cure such breach, the non-breaching party may terminate the Agreement in its entirety. Either party may also terminate the Agreement, upon written notice, if the other party files for bankruptcy, is dissolved or has a receiver appointed for substantially all of its property. The Company may terminate the Agreement if 3D Medicines, its affiliates or its sublicensees challenges the validity or enforceability of any of the Company's patents covering any of the licensed compounds or products or ceases substantially all development and commercialization of licensed products in the Territory for a specified period, subject to certain exceptions. 3D Medicines may also terminate the Agreement for convenience provided certain notice is provided to the Company.

The Agreement contemplates that the Company will enter into ancillary arrangements with 3D Medicines, including a clinical supply agreement and a manufacturing technology transfer agreement.

The Company assessed this arrangement in accordance with ASC 606 and identified the following performance obligations: 1) license to intellectual property, batiraxcept, and 2) research and development services, including conducting clinical trials. The Company concluded that each of these performance obligations were distinct because 3D Medicines can benefit from the good or service either on its own or together with other resources that are readily available, and each performance obligation is separately identifiable from other promises within the contract.

The estimated total transaction price was allocated between performance obligations based on their relative standalone selling prices. The Company uses a discounted cash flow approach and an expected cost plus a margin approach to estimate the standalone selling price for the performance obligations. The Company allocated the $21.0 million transaction price as such: $11.3 million to the research and development services performance obligation and $9.7 million to the license to intellectual property. Accordingly, the Company will recognize revenue related to the allocable research and development services obligation on a proportional performance basis as the underlying services are performed pursuant to the current development plan which is commensurate with the period and consistent with the pattern over which the Company's research and development services obligation is satisfied. The Company will recognize the revenue related to the license to intellectual property at a point in time. This is due to the fact the license was determined to be a functional license due to current stage in development of batiraxcept. Batiraxcept has been developed, dosing levels have already been determined and the drug is currently in a phase III clinical trial related to our PROC Ovarian study. As of December 31, 2021, no clinical or regulatory milestones have been assessed as probable of being reached and thus have been fully constrained. The Company continues to re-assess the probability of achievement of future milestones at the end of each reporting period.

The Company recognized in revenue $4.2 million related to the license to intellectual property and $3.2 million related to the research and development services, which also includes amounts recognized associated with providing clinical supplies for the year ended December 31, 2021. During the year ended December 31, 2021, the Company adjusted its estimate of the overall transaction price as a result of the achievement of the $6 million and $3 million development milestones. This adjustment resulted in a cumulative catch-up recorded to revenue for the year ended December 31, 2021 of approximately $5.0 million. As of December 31, 2021, the Company had a contract liability balance of $8.1 million of which $4.6 million is classified as current and $3.5 million is classified as long-term, consisting of deferred revenue related to a portion of the payment received from 3D Medicines. The Company recognized revenue of $1.8 million for the year ended December 31, 2021, related to the contract liability balance of $6.3 million as of December 31, 2020. As of December 31, 2021, the service period for the future research and development services is expected to occur over the next 3 years.

The Company recognized in revenue $5.6 million related to the license to intellectual property and $0.1 million related to the research and development services for the year ended December 31, 2020. As of December 31, 2020, the Company had a contract liability balance of $6.3 million of which $2.6 million is classified as current and $3.7 million is classified as long-term, consisting of deferred revenue related to a portion of the payment received from 3D Medicines.

6. Leases

In March 2017, the Company entered into an operating facility lease agreement for approximately 34,500 rentable square feet located at the 1020 Marsh Facility. The lease commenced in August 2017 for a period of 87 months with one renewal option for a five-year term. The Company did not include the renewal option period as the Company determined it was not reasonably certain the lease would be renewed as of the modification date.

In October 2018, the Company executed a sublease agreement in Palo Alto, California for approximately 4,240 square feet for office space. The rental term of the sublease commenced on October 30, 2018 and expired August 31, 2020.

In August 2020, the Company entered into a lease agreement in North Carolina for approximately 4,128 square feet for office space. The monthly lease payments will be approximately $9 thousand per month for a period of 63 months with a three-month rent abatement period. The lease has commenced in the fourth quarter of 2020.

The Company's rent expense including both short-term and variable lease components of $0.4 million and $0.5 million associated with the facility leases was $1.6 million and $2.1 million for the years ended December 31, 2021 and 2020, respectively. Cash paid for amounts included in the measurement of lease obligations for operating cash flows from operating leases for 2021 and 2020 was $2.5 million and $2.3 million, respectively. As of December 31, 2021, the Company's operating leases had a weighted average remaining lease term of 2.9 years and a weighted average discount rate of 7.6%, which approximates the Company's incremental borrowing rate. As of December 31, 2020, the Company's operating leases had a weighted average remaining lease term of 3.9 years and a weighted average discount rate of 7.62%, which approximates the Company's incremental borrowing rate.

As of December 31, 2021, minimum lease payments under non-cancelable operating leases by period were expected to be as follows (in thousands):

Year Ending December 31,		
2022	$	2,955
2023		3,039
2024		2,619
2025		116
2026		31
Total future minimum lease payments		8,760
Less: discount		(2,387)
Total lease liabilities	$	6,373

1020 Marsh Facility Sublease

On June 8, 2021, the Company entered into an operating sublease with Subtenant for the 1020 Marsh Facility. The final agreement and consent received from the landlord was obtained on July 13, 2021. The term of the sublease has commenced on August 1, 2021 and continues through October 31, 2024, unless the master lease is terminated earlier due to a breach by Subtenant. Subtenant will also pay to the Company, as additional rent, an amount equal to the Company's share of operating expenses attributable to the subleased premises due under the master lease. The terms entered into for this sublease agreement did not result in an impairment of the Company's long-lived assets for the year ended December 31, 2021. Lease income associated with this sublease is recorded in other income in the accompanying consolidated statements of operations. The Company has recorded lease income associated with this sublease of approximately $1.0 million for the year ended December 31, 2021. During the year ended December 31, 2021, cash received from the Subtenant was $0.9 million, which amount was included in operating cash flows.

Future base rent the Subtenant shall pay to the Company over the sublease term as of December 31, 2021, are as follows (in thousands):

Year Ending December 31,		
2022	$	2,303
2023		2,372
2024		2,029
Total	$	6,704

In August 2018, the Company entered into an operating sublease agreement with EVA Automation, Inc. ("EVA") for the 1020 Marsh Facility referenced above. The 1020 Marsh Facility sublease commenced on October 1, 2018 for 72 months. EVA was entitled to an abatement of base rent of approximately $0.9 million for the first five full calendar months of the term of the sublease. Lease income associated with this sublease is recorded in other income in the accompanying consolidated statements of operations. At the end of the first quarter ended March 31, 2020, the Company was informed by EVA that it will not be in a position to pay future sublease rental payments and intends to exit the sublease. For the year ended December 31, 2020, the Company recorded an impairment charge to long-lived assets as previously discussed in Note 2. In addition, associated with this impairment charge the Company recorded a write down totaling $1.4 million related to a straight-line sublease rent receivable balance and previously capitalized commission charges, which has been recorded in other expense within the condensed consolidated statement of operations for the year ended December 31, 2020. Overall, for the year ended December 31, 2020, the Company recorded sublease loss associated with this sublease of $13 thousand. Cash received from EVA was $1.2 million for 2020, which amount was included in operating cash flows.

7. Commitments and Contingencies

Purchase Commitments

The Company conducts research and development programs through a combination of internal and collaborative programs that include, among others, arrangements with contract manufacturing organizations and contract research organizations. The Company had contractual arrangements with these organizations including license agreements with milestone obligations and service agreements with obligations largely based on services performed.

In the normal course of business, the Company enters into various firm purchase commitments related to certain preclinical and clinical studies.

Contingencies

In the normal course of business, the Company enters into contracts and agreements that contain a variety of representations and warranties and provide for general indemnifications. The Company's exposure under these agreements is unknown because it involves claims that may be made against the Company in the future but have not yet been made. The Company accrues a liability for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated.

Indemnification

In accordance with the Company's amended and restated Certificate of Incorporation and amended and restated bylaws, the Company has indemnification obligations to its officers and directors for certain events or occurrences, subject to certain limits, while they are serving at the Company's request in such capacity. There have been no claims to date and the Company has a director and officer insurance policy that may enable it to recover a portion of any amounts paid for future claims.

Litigation

The Company may from time to time be involved in legal proceedings arising from the normal course of business. There are no pending or threatened legal proceedings as of December 31, 2021.

Contingent payable

The Company acquired a settlement that Aravive Biologics entered into with former creditors in 2014 pursuant to which Aravive Biologics had agreed to make an initial 7.5% cash payment to the creditors with the remainder contingent on future milestone payments, or Contingent Payments, until full repayment of the payables is made. The Contingent Payments are to be made from the proceeds received by Aravive Biologics from any future licensing transactions. As a result of the 3D Medicines partnership agreement in November 2020, the Contingent Payments became due. It was stipulated that the Contingent Payments will be distributed on a pro rata basis with other secured creditors and will be made from at least 10% of any proceeds from any future licensing transactions. The proceeds from any future licensing transactions will be held in an escrow account which will be administered by an independent third party. The creditors agreed that the Initial payment and any Contingent Payments represents settlement in full of all outstanding obligations owed to the creditors by Aravive Biologics and released Aravive Biologics from all claims. As a result of and in connection with the Merger, the Company determined the fair value of the contingent payable to be approximately $0.3 million, based upon an appraisal (or valuation) of the assets and liabilities assumed to determine fair values.

Due to the 3D Medicines Licensing agreement, the contingent payable became due and payable. Accordingly, for the year ended December 31, 2020, the Company accreted the balance to the gross amount of $0.7 million and paid $0.4 million. The remaining payable balance of $0.3 million was paid subsequently in February of 2021. As of December 31, 2020, the unpaid portion of the liability was classified in accrued liabilities in the accompanying consolidated balance sheet.

8. Common Stock

The Amended and Restated Certificate of Incorporation, authorizes the Company to issue 100,000,000 shares of common stock as of December 31, 2021. Common stockholders are entitled to dividends as and when declared by the Board of Directors, subject to the rights of holders of all classes of stock outstanding having priority rights as to dividends. There have been no dividends declared to date. The holder of each share of common stock is entitled to one vote.

The Company had reserved shares of common stock for future issuances as follows:

	December 31,	
	2021	**2020**
Issuance of equity-based awards under stock plan	2,131,671	1,600,703
Issuance upon exercise of options under stock plan	2,439,253	2,173,776
Issuance of restricted stock units under stock plan	—	233
Total	4,570,924	3,774,712

Related party transaction

On February 12, 2021, the Company entered into a Securities Purchase Agreement, with Eshelman Ventures relating to the issuance and sale (the "Offering") of 2,875,000 shares of the Company's common stock at a price per share of $7.29. The Offering closed on February 18, 2021 and the Company received aggregate proceeds from the Offering of approximately $20.9 million, net of offering costs. Eshelman Ventures is an entity wholly owned by the Company's chairman of the board.

Private Placement

On April 6, 2020, the Company, entered into an investment agreement (the "Investment Agreement"), by and among the Company, Eshelman Ventures, LLC, a North Carolina limited liability company (the "Eshelman Ventures"), and, solely for purposes of Article IV and Article V of the Investment Agreement, Fredric N. Eshelman, Pharm.D., who immediately became the Company's chairman of the board.

On April 8, 2020, pursuant to the Investment Agreement, Eshelman Ventures purchased 931,098 shares of the Company's unregistered common stock for an aggregate purchase price of approximately $5.0 million. The Company recorded the amount received net of expenses of approximately $78 thousand.

At the Market Offering Program

In September 2020, the Company filed a shelf registration statement on Form S-3 with the SEC which was declared effective by the SEC on November 20, 2020 (the "Form S-3"). On September 4, 2020, the Company entered into aEquity Distribution Agreement with Piper Sandler & Co. and Cantor Fitzgerald to sell shares of the Company's common stock, par value $0.0001 per share, from time to time, through an "at the market offering" program having an aggregate offering price of up to $60,000,000 through which Piper Sandler and Cantor Fitzgerald will act as sales agents. During the years ended December 31, 2021 and 2020, the Company sold 1,432,627 and 377,400 shares of common stock that were registered under the Form S-3 and received proceeds net of discounts and offering costs of $9.8 million and $2.3 million under the Equity Distribution Agreement.

9. Stock Based Awards

Equity Incentive Plans

The Company's Board of Directors (the "Board") and stockholders approved the 2019 Equity Incentive Plan (the "2019 Plan") which became effective on September 12, 2019. The 2019 Plan is a successor to and continuation of all prior plans including the Company's 2014 Equity Incentive Plan and Aravive Biologics 2017 Equity Incentive Plan and the 2010 Equity Incentive Plan, as amended (Prior Plans). As of December 31, 2021, the total number of shares of common stock available for issuance under the 2019 Plan was 1,857,990. In addition, if the shares subject to outstanding stock options or other awards under the Prior Plans: (I) terminate or expire prior to exercise or settlement; (II) are not issued because the award is settled in cash; (III) are forfeited because of failure to vest; (IV) or are reacquired or withheld (or not issued) to satisfy a tax withholding obligation or the purchase or exercise price, if any, such shares will become available for issuance under the 2019 Plan. Unless the Board provides otherwise, beginning January 1, 2020 with expiration of January 1, 2029, the total number of shares of common stock available for issuance will automatically increase annually on January 1 of each calendar year by 4.5% of the total number of issued and outstanding shares of common stock as of December 31 of the immediately preceding year. The 2019 Plan provides for granting of equity awards to employees, directors and consultants, including incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards and performance awards.

Activity under the Company's stock option plans is set forth below:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value (in thousands)
Balances, January 1, 2021	2,173,776	$ 9.59		
Options granted	1,005,628	5.26		
Options cancelled	(521,088)	31.03		
Options exercised	(219,063)	1.40		
Balances, December 31, 2021	2,439,253	$ 3.96	7.1	$ 1,611
Outstanding and expected to vest as of December 31, 2021	2,248,136	$ 3.80	6.9	$ 1,611
Exercisable as of December 31, 2021	1,477,273	$ 2.68	5.8	$ 1,611

The intrinsic values of outstanding, vested and exercisable options were determined by multiplying the number of shares by the difference in exercise price of the options and the fair value of the common stock. The intrinsic value of stock options exercised during the years ended December 31, 2021 and 2020, was $1.0 million and $0.6 million, respectively.

Stock Options Granted to Employees

During the year ended December 31, 2021 and 2020, the Company granted stock options to officers, directors and employees to purchase shares of common stock with a weighted-average grant date fair value of $4.43 and $4.69 per share, respectively. The fair value is being expensed over the vesting period of the options, which is usually 4 years on a straight-line basis as the services are being provided. No tax benefits were realized from options and other share-based payment arrangements during the periods.

During the year ended December 31, 2020, the Company modified certain stock options and restricted stock units that were outstanding to our two former CEO's and former directors. The modification of the terms or conditions of an equity award was treated as an exchange of the original award for a new award. The Company then recognized additional compensation for any incremental value. Incremental compensation cost was measured as the excess, if any, of the fair value of the modified award over the fair value of the original aware immediately before its terms were modified. As a result of these modifications during the year ended December 31, 2020, the Company recognized incremental compensation costs of $0.4 million.

As of December 31, 2021, total unrecognized employee stock-based compensation related to stock options granted was $3.6 million, which is expected to be recognized over the weighted-average remaining vesting period of 2.6 years.

The fair value of employee stock options was estimated using the Black-Scholes model with the following weighted-average assumptions:

	December 31, 2021	December 31, 2020
Expected volatility	114.2%	112.0%
Risk-free interest rate	0.8%	1.0%
Dividend yield	0.0%	0.0%
Expected life (in years)	6.0	6.0

Determining Fair Value of Stock Options

The fair value of each grant of stock options was determined by the Company using the methods and assumptions discussed below. Each of these inputs is subjective and generally requires significant judgment to determine.

Expected Volatility – The expected volatility is based on the historical volatility of our common stock over the most recent period commensurate with the estimated expected term of our stock options.

Risk-Free Interest Rate – The risk-free rate assumption was based on the U.S. Treasury instruments with terms that were consistent with the expected term of the Company's stock options.

Expected Dividend – The expected dividend assumption was based on the Company's history and expectation of dividend payouts.

Expected Term – The expected term of stock options represents the weighted average period the stock options are expected to be outstanding. For option grants that are considered to be "plain vanilla", the Company has opted to use the simplified method for estimating the expected term as provided by the SEC. The simplified method calculates the expected term as the average time-to-vesting and the contractual life of the options.

Forfeiture Rate – Forfeitures were estimated based on historical experience.

Fair Value of Common Stock – The fair value of the underlying common stock is based upon quoted prices on Nasdaq.

Stock-based compensation expense, net of estimated forfeitures, is reflected in the statements of operations as follows (in thousands):

	Year Ended December 31,	
	2021	2020
Operating Expenses		
Research and development	$ 932	$ 536
General and administrative	1,325	1,430
Total	$ 2,257	$ 1,966

2014 Employee Stock Purchase Plan

The board of directors adopted, and the Company's stockholders approved, the 2014 Employee Stock Purchase Plan (the "ESPP") in March 2014. The ESPP became effective on March 20, 2014.

The maximum aggregate number of shares of common stock that may be issued under the ESPP per purchase period is 2,500 shares (which was adjusted for the reverse stock split that occurred in October 2018). Additionally, the number of shares of common stock reserved for issuance under the ESPP will increase automatically each year, beginning on January 1, 2015 and continuing through and including January 1, 2024, by the lesser of (i) 1% of the total number of shares of our common stock outstanding on December 31 of the preceding calendar year; and (ii) 50,000 shares of common stock (which was adjusted for the reverse stock split that occurred in October 2018). The Board may act prior to the first day of any calendar year to provide that there will be no January 1 increase or that the increase will be for a lesser number of shares than would otherwise occur. Shares subject to purchase rights granted under the ESPP that terminate without having been exercised in full will not reduce the number of shares available for issuance under the ESPP.

An employee may not be granted rights to purchase stock under the ESPP if such employee (i) immediately after the grant would own stock possessing 5% or more of the total combined voting power or value of the Company's common stock, or (ii) holds rights to purchase stock under the ESPP that would accrue at a rate that exceeds $25,000 worth of our stock for each calendar year that the rights remain outstanding.

The administrator may approve offerings with a duration of not more than 27 months and may specify one or more shorter purchase periods within each offering. Each offering will have one or more purchase dates on which shares of common stock will be purchased for the employees who are participating in the offering. The administrator, in its discretion, will determine the terms of offerings under the ESPP.

The ESPP permits participants to purchase shares of our common stock through payroll deductions with up to 15% of their earnings. The purchase price of the shares will be not less than 85% of the lower of the fair market value of our common stock on the first day of an offering or on the date of purchase. The fair value of the ESPP grants were immaterial for the years ended December 31, 2021 and 2020, respectively.

10. Income Taxes

The provision (benefit) for federal income taxes in 2021 and 2020 is as follows (in thousands):

	December 31,	
	2021	**2020**
Current		
Federal	$ —	$ —
State	—	—
	—	—
Deferred		
Federal	$ —	$ —
State	—	—
Total deferred tax expense	—	—
Total income tax expense	$ —	$ —

Income tax expense (benefit) in 2021 and 2020 differed from the amount expected by applying the statutory federal tax rate to the income or loss before taxes as summarized below:

	December 31,	
	2021	**2020**
Federal tax benefit at statutory rate	21%	21%
Change in valuation allowance	(21)%	(12)%
Section 382 limitation	—	—
Other non-deductible expenses	(1)%	(1)%
Stock based compensation		(8)%
Other	1%	—
Total	0%	0%

Deferred income taxes reflect the net tax effects of net operating loss and tax credit carryforwards and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's net deferred tax assets at December 31, 2021 and 2020 are as follows (in thousands):

	December 31,	
	2021	2020
Net operating loss carry forwards	$ 18,205	$ 10,988
Research and development tax credits	404	90
Stock based compensation and other	3,694	2,860
Operating lease obligation	1,339	1,789
Total deferred tax assets	23,642	15,727
Less: Valuation allowance	(23,179)	(15,106)
Deferred tax liabilities	—	—
Operating lease right-of-use assets	(463)	(621)
Net deferred tax assets	$ —	$ —

The Company's accounting for deferred taxes involves the evaluation of a number of factors concerning the realizability of its net deferred tax assets. The Company primarily considered such factors as its history of operating losses, the nature of the Company's deferred tax assets, and the timing, likelihood and amount, if any, of future taxable income during the periods in which those temporary differences and carryforwards become deductible. At present, the Company does not believe that it is more likely than not that the deferred tax assets will be realized; accordingly, a full valuation allowance has been established and no deferred tax asset is shown in the accompanying consolidated balance sheets.

The valuation allowance increased by approximately $8.1 million in 2021 and increased $3.8 million in 2020.

At December 31, 2021, the Company has net operating loss carryforwards for federal income tax purposes of approximately $86.7 million, of which $81.9 million was generated post December 31, 2017 (after section 382 limitation) and will have no expiration date. The remaining $4.8 million of net operating loss carryforwards begin to expire in 2037. The Company also has federal research and development tax credits of approximately $404 thousand, which begin to expire in 2037.

As of December 31, 2021, the Company's total gross deferred tax assets were $23.6 million. Due to the Company's lack of earnings history and uncertainties surrounding its ability to generate future taxable income, the net deferred tax assets have been fully offset by a valuation allowance. The deferred tax assets were primarily comprised of federal tax net operating losses and tax credit carryforwards. Utilization of net operating losses and tax credit carryforwards may be limited by the "ownership change" rules, as defined in Section 382 of the Internal Revenue Code (any such limitation, a "Section 382 limitation"). Similar rules may apply under state tax laws. The Company has performed an analysis to determine whether an "ownership change" occurred from inception up to the Aravive Biologics' acquisition date. Based on this analysis during 2018, management determined that both Versartis, Inc. and Aravive Biologics did experience ownership changes, which resulted in a significant impairment of the net operating losses and credit carryforwards. The Company reviewed ownership changes during the years ended December 31, 2021 and 2020 and concluded that there were no additional Section 382 limitations after 2018.

The Company follows the provisions of FASB Accounting Standards Codification 740-10 (ASC 740-10), Accounting for Uncertainty in Income Taxes. ASC 740-10 prescribes a comprehensive model for the recognition, measurement, presentation and disclosure in consolidated financial statements of uncertain tax positions that have been taken or expected to be taken on a tax return. No liability related to uncertain tax positions is recorded in the consolidated financial statements. At December 31, 2021 and 2020, the Company's reserve for unrecognized tax benefits is approximately $209 thousand and $39 thousand, respectively. Due to the full valuation allowance at December 31, 2021, current adjustments to the unrecognized tax benefit will have no impact on the Company's effective income tax rate. The Company does not anticipate any significant change in its unrecognized tax benefits within 12 months of this reporting date. The Company includes penalties and interest expense related to income taxes as a component of other expense and interest expense, respectively, as necessary.

Because the statute of limitations does not expire until after the net operating loss and credit carryforwards are actually used, the statute is effectively open for all tax years. However, due to the above-mentioned ownership change and impairment of net operating loss and credit carryforwards, only net operating loss and credit carryforwards post- January 14, 2017 are carried forward to future years for federal and state tax purposes.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	Amount
Balance at January 1, 2020	39
Gross increase/ (decrease) related to prior year tax positions	—
Gross increase related to current year positions	—
Reductions to unrecognized tax benefits related to lapsing statute of limitations	—
Balance at December 31, 2020	$ 39
Gross increase/ (decrease) related to prior year tax positions	124
Gross increase related to current year positions	46
Reductions to unrecognized tax benefits related to lapsing statute of limitations	—
Balance at December 31, 2021	$ 209

All tax years remain open for examination by federal and state tax authorities.

11. Employee Benefit Plans

Defined Contribution Plan

The Company sponsors a 401(k) Plan, which stipulates that eligible employees can elect to contribute to the 401(k) Plan, subject to certain limitations of eligible compensation. The Company may match employee contributions in amounts to be determined at the Company's sole discretion. Employer contributions were $88 thousand and $15 thousand for the years ended December 31, 2021 and 2020, respectively.

12. Net loss per share of Common Stock

The following table summarizes the computation of basic and diluted net loss per share attributable to common stockholders of the Company (in thousands, except per share data):

	Year Ended December 31,	
	2021	2020
Net loss	$ (39,151)	$ (30,543)
Basic and diluted net loss per share	$ (1.95)	$ (1.93)
Weighted-average shares used to compute basic and diluted net loss per share	20,070	15,790

Basic net loss attributable to common stockholders per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common shares outstanding for the period. Diluted net loss attributable to common stockholders per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common shares and dilutive common stock equivalents outstanding for the period, determined using the treasury-stock method and the as-if converted method, for convertible securities, if inclusion of these is dilutive. Because the Company has reported a net loss for the years ended December 31, 2021 and 2020, the Company did not have dilutive common stock equivalents and therefore diluted net loss per common share is the same as basic net loss per common share for those years.

The following potentially dilutive securities outstanding at the end of the years presented have been excluded from the computation of diluted shares outstanding:

	Year Ended December 31,	
	2021	2020
Options to purchase common stock	2,439,253	2,173,776
Restricted stock units	—	233

13. Subsequent Events

Related party transaction

In January 2022, the Company entered into an investment agreement (the "Investment Agreement")with Eshelman Ventures, LLC and, solely for purposes of Article IV and Article V of the Investment Agreement, Dr. Eshelman relating to the issuance of a pre-funded warrant to purchase up to 4,545,455 shares of the Company's common stock, par value $0.0001 per share, at a price of $2.20 per share, which was the consolidated closing bid price of the Company's Common Stock on The Nasdaq on December 31, 2021, for an aggregate purchase price of $10 million. The closing of the transaction occurred on January 5, 2022. Pursuant to the terms of the Investment Agreement, the Company was required to file a registration statement registering the shares of common stock underlying the pre-funded warrant. The registration statement was filed on January 5, 2022 and declared effective by the SEC on January 18, 2022.

At the Market Offering Program

From January 1, 2022 to March 15, 2022, the Company sold 54,763 shares for proceeds net of discounts and offering costs of $0.1 million under the Equity Distribution Agreement.

Registered Direct Offering and Related Party Transaction

On March 31, 2022, the Company closed a registered direct offering of its common stock with a single healthcare-focused institutional investor and Eshelman Ventures, LLC, a related party, pursuant to which the Company issued 3,185,216 shares of common stock, 1,665,025 pre-funded warrants and common stock warrants to purchase up to 4,850,241 shares of common stock in a registered direct offering priced at-the-market under Nasdaq rules. The purchase price per share and accompanying common stock warrant was $2.005 for the institutional investor and $2.325 for Eshelman Ventures, LLC. The purchase price per pre-funded warrant and accompanying common stock warrant was $2.004 for the institutional investor The net proceeds from the offering was $9.3 million, including underwriting discounts, commission and offering expenses. The common stock warrants issued to the institutional investor are exercisable immediately, will expire five years from the exercisable date and will have an exercise price of $1.88 per share. The common stock warrants issued to Eshelman Ventures, LLC will be exercisable upon the approval by the stockholders of the Company of previously issued securities, will expire five years following the issuance date and will have an exercise price of $2.20 per share. The Company could receive additional gross proceeds of $9.4 million, if the warrants are fully exercised.

Exhibit Index

Exhibit Number	Description
1.1	Equity Distribution Agreement, dated as of March 26, 2019 between Aravive, Inc. and Piper Jaffray & Co (Incorporated herein by reference to exhibit number 1.1 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on March 26, 2019).
1.2	Equity Distribution Agreement, dated as of September 4, 2020 between Aravive, Inc., Piper Sandler & Co. and Cantor Fitzgerald & Co. (Incorporated herein by reference to exhibit number 1.1 of the Registration Statement on Form S-3 (File No. 333-248612) as filed with the SEC on September 4, 2020).
3.1	Amended and Restated Certificate of Incorporation (Incorporated herein by reference to the same numbered exhibit of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on March 26, 2014).
3.2	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Versartis, Inc. (Incorporated herein by reference to exhibit number 3.1 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on June 1, 2017).
3.3	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Versartis, Inc. (Incorporated herein by reference to exhibit number 3.1 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on September 12, 2017).
3.4	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Versartis, Inc. (Incorporated herein by reference to exhibit number 3.1 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on October 16, 2018).
3.5	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Versartis, Inc. (Incorporated herein by reference to exhibit number 3.2 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on October 16, 2018).
3.6	Certificate of Correction to Certificate of Amendment of Amended and Restated Certificate of Incorporation of Aravive, Inc. (Incorporated herein by reference to exhibit number 3.6 on our annual report on Form 10-K (File No. 001-36361), as filed with the SEC on March 15, 2019).
3.7	Amended and Restated Bylaws. (Incorporated herein by reference to Exhibit 3.4 of our registration statement on Form S-1, as amended (File No. 333-193997), as filed with the SEC on March 6, 2014).
4.1	Form of Stock Certificate. (Incorporated herein by reference to the same numbered exhibit of our quarterly report on Form 10-Q (File No. 001-36361), for the quarterly period ended March 31, 2014, as filed with the SEC on May 14, 2014).
4.2#	Description of Capital Securities.(Incorporated by reference to Exhibit 4.2 of our Annual Report on Form 10-K (File No. 001-36361) as filed on March 16, 2021).
4.3*	The Aravive, Inc. 2019 Equity Incentive Plan (incorporated by reference to Appendix A to the Definitive Proxy Statement on Schedule 14A filed with the Securities and Exchange Commission on August 9, 2019).
4.4	Form of Pre-Funded Common Stock Purchase Warrant of Aravive, Inc. (Incorporated herein by reference to Exhibit 4.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 4, 2022).
10.1*	The Versartis 2009 Stock Plan, as amended. (Incorporated herein by reference to the same numbered exhibit of our registration statement on Form S-1 (File No. 333-193997), as filed with the SEC on February 18, 2014).
10.2*	Form of Notice of Stock Option Grant and Incentive Stock Option Agreement under 2009 Stock Plan of Versartis, Inc. (Incorporated herein by reference to the same numbered exhibit of our registration statement on Form S-1 (File No. 333-193997), as filed with the SEC on February 18, 2014).
10.3*	Form of Notice of Stock Option Grant and Non-Statutory Stock Option Agreement under 2009 Stock Plan. (Incorporated herein by reference to the same numbered exhibit of our registration statement on Form S-1 (File No. 333-193997), as filed with the SEC on February 18, 2014).
10.4*	2014 Equity Incentive Plan. (Incorporated herein by reference to Exhibit 10.6 of our registration statement on Form S-1, as amended (File No. 333-193997), as filed with the SEC on March 6, 2014).
10.5*	Form of 2014 Equity Incentive Plan Stock Option Grant Notice and Stock Option Agreement of Versartis, Inc. (Incorporated herein by reference to Exhibit 99.5 of our registration statement on Form S-8 (File No. 333-194949), as filed with the SEC on April 1, 2014).
10.6*	Form of 2014 Equity Incentive Plan Restricted Stock Unit Grant Notice and Restricted Stock Unit Award Agreement of Versartis, Inc. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361), as filed with the SEC on April 17, 2014).

Exhibit Number	Description
10.7*	Change in Control Severance Plan Established by Versartis, Inc. (Incorporated herein by reference to Exhibit 10.7 of our registration statement on Form S-1, as amended (File No. 333-193997), as filed with the SEC on March 10, 2014).
10.8*	2014 Employee Stock Purchase Plan. (Incorporated herein by reference to Exhibit 10.9 of our registration statement on Form S-1, as amended (File No. 333-193997), as filed with the SEC on March 6, 2014).
10.9*	Form of Indemnification Agreement by and between the Company and each of its directors and officers. (Incorporated herein by reference to Exhibit 10.10 of our registration statement on Form S-1, as amended (File No. 333-193997), as filed with the SEC on March 6, 2014).
10.10	Agreement and Plan of Merger and Organization among Versartis, Inc., Velo Merger Sub, Inc. and Aravive Biologics, Inc. dated as of June 3, 2018 (Incorporated herein by reference to Exhibit 2.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on June 4, 2018).
10.11†	Cancer Research Grant Contract, dated December 1, 2015, by and between the Cancer Prevention and Research Institute of Texas and Ruga Corporation (Incorporated herein by reference to Exhibit 10.1 of our registration statement on Form S-4/A (File No. 333-226594 as filed with the SEC on August 24, 2018).
10.12†	Exclusive License Agreement, dated January 25, 2012, by and between The Board of Trustees of the Leland Stanford Junior University and Ruga Corporation (Incorporated herein by reference to Exhibit 10.2 of our registration statement on Form S-4/A (File No. 333-226594 as filed with the SEC on August 24, 2018).
10.13†	Amendment to the Exclusive License Agreement, dated July 26, 2012, by and between the Board of Trustees of Leland Stanford Junior University and Ruga Corporation (Incorporated herein by reference to Exhibit 10.3 of our registration statement on Form S-4 (File No. 333-226594 as filed with the SEC on August 3, 2018).
10.14†	Amendment No. 2 to the Exclusive License Agreement, dated September 25, 2017, by and between The Board of Trustees of the Leland Stanford Junior University and Ruga Corporation (Incorporated herein by reference to Exhibit 10.4 of our registration statement on Form S-4 (File No. 333-226594 as filed with the SEC on August 3, 2018).
10.15†	Amendment No. 3 to the Exclusive License Agreement, dated September 25, 2017, by and between The Board of Trustees of the Leland Stanford Junior University and Ruga Corporation (Incorporated herein by reference to Exhibit 10.5 of our registration statement on Form S-4 (File No. 333-226594 as filed with the SEC on August 3, 2018).
10.16†	Master Manufacturing Services Agreement, dated July 11, 2016, by and between WuXi Biologics (Hong Kong) Limited and Aravive Biologics, Inc. (Incorporated herein by reference to Exhibit 10.6 of our registration statement on Form S-4/A (File No. 333-226594 as filed with the SEC on August 24, 2018).
10.17†	License Agreement dated December 1, 2017, by and between WuXi Biologics (Hong Kong) Limited and Aravive Biologics, Inc. (Incorporated herein by reference to Exhibit 10.7 of our registration statement on Form S-4 (File No. 333-226594 as filed with the SEC on August 3, 2018).
10.18*	Indemnification Agreement dated October 17, 2016, by and between Ruga Corporation and Vinay Shah (Incorporated herein by reference to Exhibit 10.8 of our registration statement on Form S-4 (File No. 333-226594 as filed with the SEC on August 3, 2018).
10.19	Sublease dated August 21, 2018, by and among Versartis, Inc. and Eva Automation, Inc. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on September 20, 2018).
10.20*	Aravive, Inc. 2017 Equity Incentive Plan (Incorporated herein by reference to Exhibit 4.9 of our registration statement on Form S-8 (File No. 333-227865), as filed with the SEC on October 17, 2018).
10.21*	Aravive, Inc. 2010 Equity Incentive Plan, as amended (Incorporated herein by reference to Exhibit 4.10 of our registration statement on Form S-8 (File No. 333-227865), as filed with the SEC on October 17, 2018).

Exhibit Number	Description
10.22*	Severance Agreement dated May 31, 2018 and amendment thereto dated September 24, 2018 between Aravive Biologics, Inc. and Vinay Shah (Incorporated herein by reference to Exhibit 10.3 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on February 12, 2019).
10.23*	Non-Employee Director Compensation Policy of Aravive, Inc., as amended January 3, 2019 (Incorporated herein by reference to exhibit number 10.60 on our annual report on Form 10-K (File No. 001-36361), as filed with the SEC on March 15, 2019).
10.24*	First Amendment to Aravive, Inc. 2014 Equity Incentive Plan (Incorporated herein by reference to Exhibit 10.2 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on March 6, 2019).
10.25*	Offer Letter, dated January 8, 2020, between Rekha Hemrajani and Aravive, Inc. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 9, 2020).
10.26*	Separation Agreement, dated January 9, 2020, between Jay Shepard and Aravive, Inc. (Incorporated herein by reference to Exhibit 10.3 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 9, 2020).
10.27	Consulting Agreement, dated January 9, 2020, between Jay Shepard and Aravive, Inc. (Incorporated herein by reference to Exhibit 10.4 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 9, 2020).
10.28*	Aravive, Inc. 2019 Equity Incentive Plan (Incorporated herein by reference to Exhibit 99.1 of our registration statement on Form S-8 (File No. 333-233866), as filed with the SEC on September 20, 2019).
10.29*	Form of Stock Option Grant Notice and Stock Option Agreement and Notice of Exercise of Aravive, Inc. under the 2019 Incentive Plan (Incorporated herein by reference to Exhibit 99.2 of our registration statement on Form S-8 (File No. 333-233866), as filed with the SEC on September 20, 2019).
10.30*	Offer Letter, dated March 26, 2020, between Vinay Shah and Aravive, Inc. (Incorporated by reference to Exhibit 10.48 of our Annual Report on Form 10-K (File No. 001-36361) as filed on March 27, 2020).
10.31*	Offer Letter, dated March 26, 2020 between Gail McIntyre and Aravive, Inc. (Incorporated by reference to Exhibit 10.49 of our Annual Report on Form 10-K (File No. 001-36361) as filed on March 27, 2020).
10.32*	Form of 2019 Equity Incentive Plan Restricted Stock Unit Grant Notice and Restricted Stock Unit Award Agreement. (Incorporated by reference to Exhibit 10.50 of our Annual Report on Form 10-K (File No. 001-36361) as filed on March 27, 2020).
10.33	Investment Agreement, dated as of April 6, 2020, by and among Aravive, Inc., Eshelman Ventures, LLC, and, solely for purposes of Article IV and Article V of the Investment Agreement, Fredric N. Eshelman, Pharm.D. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020).
10.34*	Separation Agreement dated April 8, 2020 between Aravive, Inc. and Rekha Hemrajani (Incorporated herein by reference to Exhibit 10.3 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020).
10.35*	Option Agreement dated April 8, 2020 by and between Aravive, Inc. and Srini Akkaraju (Incorporated herein by reference to Exhibit 10.4 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020)
10.36*	Option Agreement dated April 8, 2020 by and between Aravive, Inc. and Jay Shepard. (Incorporated herein by reference to Exhibit 10.5 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020)
10.37*	Option Agreement dated April 8, 2020 by and between Aravive, Inc. and Robert Hoffman. (Incorporated herein by reference to Exhibit 10.6 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020)

Exhibit Number	Description
10.38*	Amendment to Offer Letter dated as of April 8, 2020 by and between Aravive, Inc. and Gail McIntyre. (Incorporated herein by reference to Exhibit 10.7 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on April 9, 2020)
10.39††	Collaboration and License Agreement between Aravive, Inc. and 3D Medicines Inc. dated November 6, 2020 (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on November 10, 2020)
10.40*	Consulting Agreement, dated December 31, 2020, between Aravive, Inc. and Ray Tabibiazar (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 1, 2021)
10.41*	Offer Letter, dated September 8, 2020 between Reshma Rangwala and Aravive, Inc. (Incorporated herein by reference to Exhibit 10.48 of our Annual Report on Form 10-K (File No. 001-36361 as filed with the SEC on March 16, 2021)
10.42	Amendment to Offer Letter dated as of January 25, 2021 by and between Aravive, Inc. and Gail McIntyre (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 27, 2021)
10.43	Securities Purchase Agreement dated as of February 12, 2021 by and between Aravive, Inc. and Eshelman Ventures, LLC (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on February 16, 2021)
10.44	Sublease entered into as of June 8, 2021 by and between Aravive, Inc, and Grail, Inc. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on June 14, 2021)
10.45	Investment Agreement, dated as of January 3, 2022, by and among Aravive, Inc., Eshelman Ventures, LLC, and solely for purposes of Article IV and V of the Investment Agreement, Fredric N. Eshelman, Pharm.D. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on January 4, 2022)
10.46*	Offer Letter, dated February 20, 2022 and effective as of March 22, 2022, between Leonard Scott Dove and Aravive, Inc. (Incorporated herein by reference to Exhibit 10.1 of our current report on Form 8-K (File No. 001-36361 as filed with the SEC on March 22, 2022)
21.1#	List of Subsidiaries.
23.1#	Consent of BDO USA, LLP.
24.1#	Power of Attorney (included in the signature page hereto).
31.1#	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2#	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1#	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2#	Certification of Principal 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	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL and contained in Exhibit 101)

Filed herewith

† Registrant has been granted confidential treatment for certain portions of this agreement. The omitted portions have been filed separately with the SEC.

†† Registrant has omitted certain portions of this exhibit in accordance with Item 601 (b)(10) of Regulation S-K. The Company agrees to furnish unredacted copies of these exhibits to the SEC upon request.

* Indicates management contract or compensatory plan.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized**.**

Aravive, Inc.

Date: March 31, 2022

By: /s/ Gail McIntyre

Gail McIntyre
Chief Executive Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Gail McIntyre and Vinay Shah, and each of them, his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this report, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the SEC, 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 might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or either of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Signature	Title	Date
/s/ Gail McIntyre Gail McIntyre	Chief Executive Officer and Director (Principal Executive Officer)	March 31, 2022
/s/ Vinay Shah Vinay Shah	Chief Financial Officer (Principal Financial Officer & Principal Accounting Officer)	March 31, 2022
/s/ Fredric N. Eshelman, Pharm.D. Fredric N. Eshelman, Pharm.D.	Director (Executive Chairman of the Board of Directors)	March 31, 2022
/s/ Amato Giaccia, Ph. D. Amato Giaccia, Ph. D.	Director	March 31, 2022
/s/ Michael W. Rogers Michael W. Rogers	Director	March 31, 2022
/s/ Eric Zhang Eric Zhang	Director	March 31, 2022
/s/ Sigurd Kirk Sigurd Kirk	Director	March 31, 2022
/s/ John A. Hohneker, M.D. John A. Hohneker, M.D.	Director	March 31, 2022
/s/ Peter T. C. Ho, M.D., Ph.D. Peter T. C. Ho, M.D., Ph.D.	Director	March 31, 2022

Exhibit 21.1

SUBSIDIARIES

Aravive Biologics, Inc. (Delaware)

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

Aravive, Inc.
Houston, Texas

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-239512, No. 333-248612, and No. 333-262020) and Form S-8 (No.333-227865, No. 333-216586, No. 333-210013, No. 333-204178, No. 333-194949, No. 333-230348, No. 333-233866, No. 333-237425, and No. 333-254400) of Aravive, Inc. of our report dated March 31, 2022, relating to the consolidated financial statements, which appears in Form 10-K. Our report contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

/s/ BDO USA, LLP
Raleigh, North Carolina

March 31, 2022

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO RULES 13a-14 AND 15d-14 UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Gail McIntyre, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aravive, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 31, 2022

By: /s/ Gail McIntyre
Name: Gail McIntyre
Title: Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO RULES 13a-14 AND 15d-14 UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Vinay Shah, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aravive, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 31, 2022

By: /s/ Vinay Shah
Name: Vinay Shah
Title: Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. §1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, I, Gail McIntyre, the Chief Executive Officer of Aravive, Inc. (the "Registrant") hereby certifies, to my knowledge, that:

(1) The accompanying Annual Report on Form 10-K of the Registrant for the year ended December 31, 2021 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant for the periods presented therein.

Date: March 31, 2022

By: /s/ Gail McIntyre
Name: Gail McIntyre
Title: Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. §1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, I, Vinay Shah, the Chief Financial Officer of Aravive, Inc. (the "Registrant") hereby certifies, to my knowledge, that:

(1) The accompanying Annual Report on Form 10-K of the Registrant for the year ended December 31, 2021 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant for the periods presented therein.

Date: March 31, 2022

By: /s/ Vinay Shah
Name: Vinay Shah
Title: Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)