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: 001-36046

AXOGEN, INC.

(Exact name of registrant as specified in its charter)

Minnesota	**41-1301878**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
13631 Progress Blvd., Suite 400 Alachua, FL	**32615**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(386) 462-6800**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, $0.01 par value	AXGN	The Nasdaq Stock Market

Securities registered pursuant to Section 12(g) of the Act:

None
(Title of class)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☐

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☐ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☐ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐	Accelerated filer ☒
Non-accelerated filer ☐	Smaller reporting company ☐
	Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☐

As of June 30, 2021, the aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant was approximately $ 641,907,222 based upon the last reported sale price of our common stock on the Nasdaq Capital Market.

The number of shares outstanding of the Registrant's common stock as of February 22, 2022 was 41,795,240 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the Registrant's fiscal year are incorporated by reference into Part III of this Form 10-K.

TABLE OF CONTENTS

FORWARD-LOOKING STATEMENTS

From time to time, in reports filed with the U.S. Securities and Exchange Commission (the "SEC") (including this Annual Report on Form 10-K), in press releases, and in other communications to shareholders or the investment community, Axogen, Inc. (including Axogen, Inc.'s wholly owned subsidiaries, Axogen Corporation, Axogen Processing Corporation and Axogen Europe GmbH, the "Company," "Axogen," "we," "our," or "us") may provide forward-looking statements, as defined in the Private Securities Litigation Reform Act of 1995, concerning possible or anticipated future results of operations or business developments. These statements are based on management's current expectations or predictions of future conditions, events, or results based on various assumptions and management's estimates of trends and economic factors in the markets in which the Company is active, as well as its business plans. Words such as "expects," "anticipates," "intends," "plans," "believes," "seeks," "estimates," "projects," "forecasts," "continue," "may," "should," "will," "goals," and variations of such words and similar expressions are intended to identify such forward-looking statements. The forward-looking statements may include, without limitation, statements regarding our assessment of our internal controls over financial reporting; statements related to the impact of the 2019 novel coronavirus and any and all variants thereof ("COVID-19") on our business; hospital staffing challenges and its impact on our business; statements regarding our growth, our financial guidance and performance; product development; product potential; Axogen Processing Center renovation timing and expense; sales growth; product adoption; market awareness of our products; anticipated capital requirements, including the potential of future financings; data validation; expected clinical study enrollment, timing and outcomes; our visibility at and sponsorship of conferences and our educational events; regulatory process and approvals; and other factors, including legislative, regulatory, political and economic developments not within our control. The forward-looking statements are and will be subject to risks and uncertainties, which may cause actual results to differ materially from those expressed or implied in such forward-looking statements. Forward-looking statements contained in this Form 10-K should be evaluated together with the many uncertainties that affect the Company's business and its market, particularly those discussed in the risk factors and cautionary statements set forth in the Company's filings with the SEC, including as described in "Risk Factors" included in Item 1A of this Form 10-K and "Risk Factor Summary" included in this Form 10-K. Forward-looking statements are not guarantees of future performance, and actual results may differ materially from those projected. The forward-looking statements are representative only as of the date they are made and, except as required by applicable law, the Company assumes no responsibility to publicly update or revise any forward-looking statements, whether as a result of new information, future events, changed circumstances or otherwise.

RISK FACTOR SUMMARY

Below is a summary of our risk factors. Additional discussion of the risks summarized in this risk factor summary, and other risks that we face, can be found below under the heading "Risk Factors" and should be carefully considered, together with other information in this Form 10-K and our other filings with the SEC before making an investment decision regarding our common stock.

Risks Related to the Company

- *Our revenue growth depends on our ability to increase distribution and sales to existing customers and develop new customers, domestically and abroad, and there can be no assurance that these efforts will result in significant increases in sales.*
- *Our revenue depends primarily on four products.*
- *The COVID-19 pandemic could continue to have a material adverse effect on our ability to operate, results of operations, financial condition, liquidity, and capital investments.*
- *Our success will be dependent on continued acceptance of our products by the medical community.*
- *We have not consistently experienced positive cash flow from our operations, and the ability to achieve consistent, positive cash flow from operations will depend on increasing revenue from distribution of our products, which may not be achievable.*
- *We are highly dependent on the continued availability of our facilities and could be harmed if the facilities are unavailable for any prolonged period of time.*
- *Delays, interruptions, or the cessation of production by our third-party suppliers of important materials may prevent or delay our ability to manufacture or process the final products.*
- *Technological change and competition for newly developed products could reduce demand for our products.*
- *We must maintain high quality processing of our products.*
- *Our revenue depends upon prompt and adequate reimbursement from public and private insurers and national health systems.*
- *Negative publicity concerning methods of donating human tissue and screening of donated tissue may reduce demand for our products and negatively impact the supply of available donor tissue.*
- *The failure of third parties to perform many necessary services for the commercialization of our products, including services related to recovery/acquisition, distribution and transportation, would impair our ability to meet commercial demand.*
- *We are dependent on our relationships with independent agencies to generate a material portion of our revenue.*
- *If we do not manage product inventory in an effective and efficient manner, it could adversely affect profitability resulting in significant fluctuations in our operating results.*
- *Our operating results could be adversely impacted if we are unable to effectively manage and sustain our future growth or scale our operations.*
- *There may be significant fluctuations in our operating results.*
- *We may be unsuccessful in commercializing our products outside the U.S.*
- *We incur costs as a result of operating as a public company, and our management is required to devote substantial time to compliance initiatives.*
- *Changes in the tax code could have a material adverse effect on our results of operations, financial condition, liquidity, and capital investments.*

Risks Related to the Regulatory Environment in which the CompanyOperates

- *Our business is subject to continuing regulatory compliance by the FDA and other authorities, which is costly and could result in negative effects on our business.*
- *We have suspended market availability of our Avive Soft Tissue Membrane and there is no guarantee it will be placed back on the market.*
- *The use, misuse or off-label use of our products may harm our reputation, the image of our products, result in injuries leading to product liability suits, which could be costly to our business, or result in FDA sanctions.*
- *Our Avance Nerve Graft product is currently allowed to be distributed pursuant to a transition plan with the FDA and a change in position by the FDA regarding its use of enforcement discretion to permit the sale of Avance Nerve Graft would have a material adverse effect on us.*
- *Our business is subject to continuing compliance to standards by various accreditation and registration bodies which is costly, and loss of accreditation or registration could result in negative effects on our business.*
- *Our Axoguard products are subject to FDA and international regulatory requirements.*
- *Defective products could lead to recall or other negative business conditions.*
- *Our operations must comply with FDA and other governmental requirements.*
- *Clinical trials can be long, expensive and results are ultimately uncertain which could jeopardize our ability to obtain regulatory approval and continue to market our Avance Nerve Graft product.*
- *We rely on third parties to conduct our clinical trials and they may not perform as contractually required or expected.*

- *U.S. governmental regulation could restrict the use of our Avance Nerve Graft and Avive Soft Tissue Membrane product, restrict our procurement of tissue or increase costs.*
- *Our Axotouch product is subject to FDA and other regulatory requirements.*
- *Healthcare law and policy changes may have a material adverse effect on us.*
- *We could be subject to civil or criminal penalties if we are found to have violated laws protecting the confidentiality of health information, which could increase our liabilities and harm our reputation or our business.*

Risks Related to Our Intellectual Property

- *Failure to protect our intellectual property rights could result in costly and time-consuming litigation and our loss of any potential competitive advantage.*
- *Future protection for our proprietary rights is uncertain and may impact our ability to successfully compete in our industry.*
- *The patent protection for our products may expire before we are able to maximize their commercial value which may subject us to increased competition and reduce or eliminate our opportunity to generate product revenue.*
- *Others may claim an ownership interest in our intellectual property which could expose us to litigation and have a significant adverse effect on our prospects.*
- *We depend on the maintenance of exclusive licenses.*
- *Our trademarks are valuable, and our business may be adversely affected if trademarks are not adequately protected.*

Risks Related to Our Common Stock

- *An active trading market in our common stock may not be maintained.*
- *The price of our common stock could be highly volatile due to a number of factors, which could lead to losses by investors and costly securities litigation.*
- *We do not anticipate paying any cash dividends in the foreseeable future.*
- *Anti-takeover provisions in Minnesota law may deter acquisition bids for us that you might consider favorable.*

Risks Related to Financing Our Business

- *Our credit facility and payment obligations under the Revenue Participation Agreement with TPC Investments II LP and Argo SA LLC, each affiliates of Oberland Capital (collectively, "Oberland Capital"), contains operating and financial covenants that restrict our business and financing activities, require cash payments over an extended period of time and are subject to acceleration in specified circumstances, which may result in Oberland Capital taking possession and disposing of any collateral.*
- *We may need to raise additional funds to finance our future capital or operating needs, which could have adverse impacts on our business, results of operations, and the interests of our shareholders.*

General Risk Factors

- *Legal proceedings that we become involved in from time to time could adversely affect our business operations or financial condition.*
- *We may be subject to future product liability litigation which could be expensive, and our insurance coverage may not be adequate.*
- *Loss of key members of management, who we need to succeed, could adversely affect our business.*
- *Our business and financial performance could be adversely affected, directly or indirectly, by natural or man-made disasters or other similar events.*
- *Changes in U.S. trade policy, threats of international tariffs, and changes to the U.S. political landscape may adversely affect our business, results of operations, financial condition, and prospects.*
- *Our results of operations could be negatively affected by potential fluctuations in foreign currency exchange rates.*
- *Our failure to protect our technology systems and comply with data protection laws and regulations could lead to government enforcement actions and significant penalties against us, and adversely impact our business, results of operations, financial condition, and prospects.*
- *We are dependent on internal information and telecommunications systems, and any failure of these systems, including system security breaches, data protection breaches or other cybersecurity attacks, may negatively impact our business and results of operations.*
- *Our management has broad discretion in the use of our cash and cash equivalents and, despite management's efforts, cash and cash equivalents may be used in a manner that does not increase the value of shareholders' investments.*
- *Our business and stock price may be adversely affected if our internal controls are not effective.*
- *Our business, results of operations, financial condition, and prospects could be adversely affected, directly or indirectly, by the effects of an increased focus on environmental, social and governance issues.*

PART I

ITEM 1. BUSINESS

General

Axogen is the leading company focused specifically on the science, development, and commercialization of technologies for peripheral nerve regeneration and repair. We are passionate about providing the opportunity to restore nerve function and quality of life for patients with peripheral nerve injuries. We provide innovative, clinically proven, and economically effective repair solutions for surgeons and healthcare providers. Peripheral nerves provide the pathways for both motor and sensory signals throughout the body. Every day, people suffer traumatic injuries or undergo surgical procedures that impact the function of their peripheral nerves. Physical damage to a peripheral nerve or the inability to properly reconnect peripheral nerves can result in the loss of muscle or organ function, the loss of sensory feeling, or the initiation of pain.

Axogen's platform for peripheral nerve repair features a comprehensive portfolio of products, including:

- Avance® Nerve Graft, a biologically active off-the-shelf processed human nerve allograft for bridging severed peripheral nerves without the comorbidities associated with a second surgical site;
- Axoguard Nerve Connector®, a porcine (pig) submucosa extracellular matrix ("ECM") coaptation aid for tensionless repair of severed peripheral nerves;
- Axoguard Nerve Protector®, a porcine submucosa ECM product used to wrap and protect damaged peripheral nerves and reinforce the nerve reconstruction while preventing soft tissue attachments;
- Axoguard Nerve Cap®, a porcine submucosa ECM product used to protect a peripheral nerve end and separate the nerve from the surrounding environment to reduce the development of symptomatic or painful neuroma;
- Avive® Soft Tissue Membrane, a processed human umbilical cord intended for surgical use as a resorbable soft tissue conduit; and
- Axotouch® Two-Point Discriminator, used to measure the innervation density of any surface area of the skin.

We suspended the market availability of Avive Soft Tissue Membrane ("Avive") effective June 1, 2021 and we continue discussions with the U.S. Food and Drug Administration (the "FDA") to determine the appropriate regulatory classification and requirements for Avive. The suspension was not based on any safety or product issues or concerns with Avive. We seek to return Avive to the market, although we are unable to estimate the timeframe or provide any assurances that a return to the market will be achievable.

The Axogen portfolio of products is available in the U.S., Canada, Germany, United Kingdom ("UK"), Spain, South Korea, and several other countries.

Nerves can be damaged in several ways. When a nerve is cut due to a traumatic injury or inadvertently during a surgical procedure, functionality of the nerve may be compromised, causing the nerve to no longer carry the signals to and from the brain to the muscles and skin thereby reducing or eliminating functionality. The loss of function can impact a person's ability to work and perform daily tasks, to properly be aware and respond to their environment (e.g., heat, cold or other dangers), and could negatively impact their ability to experience and enjoy life.

Nerve damage or transection of the type described above generally requires a surgical repair. Traditionally, the standard has been to either suture the nerve ends together directly without tension or to bridge the gap between the nerve ends with a less important nerve surgically removed from elsewhere in the patient's own body, referred to as nerve autograft. More recently, synthetic or collagen conduits have been used for the repair of short gaps. Nerves that are not repaired or heal abnormally may result in a permanent loss of function and/or sensation. Additionally, abnormal healing can form a neuroma that may send altered signals to the brain resulting in the sensation of pain. This abnormal section of the nerve can, under certain circumstances, be surgically cut out and the resulting gap repaired.

In addition, compression on a nerve, blunt force trauma or other physical irritations to a nerve can cause nerve damage that may alter the signal conduction of the nerve, result in pain, and may, in some instances, require surgical intervention to address the resulting nerve compression. Finally, when a patient undergoes a mastectomy due to breast cancer or prophylactically due to a genetic predisposition for breast cancer, the nerves are cut to allow the removal of the breast tissue. This can result in a loss of sensation, the potential risk of a symptomatic neuroma, and could negatively impact the patient's quality of life. When a patient chooses an autologous breast reconstruction after a mastectomy, sensation and quality of life can, in certain cases, be returned through surgical nerve repair.

To improve the options available for the surgical repair and regeneration of peripheral nerves, Axogen has developed and licensed regenerative medicine technologies. Axogen's innovative approach to regenerative medicine has resulted in first-in-class products that it believes are redefining the peripheral nerve repair market. Axogen's products are used by surgeons during surgical interventions to repair a wide variety of physical nerve damage or transection throughout the body, which can range from a simple laceration of a finger to a complex brachial plexus injury (an injury to the network of nerves that control the movement and sensation of the shoulder, arm, and hand) as well as nerve injuries caused by dental, orthopedic, and other surgical procedures.

Peripheral Nerve Regeneration Market Overview

Peripheral nerve injury ("PNI") through damage or transection is a major source of physical disability impairing the ability to move muscles or to feel normal sensations. Patients suffer traumatic bodily injuries every day that may result in damage or transection to peripheral nerves severe enough to require surgical treatment. We break our total addressable market into four categories: (1) Trauma, (2) oral maxillofacial ("OMF"), (3) breast reconstruction neurotization ("Breast") and (4) Upper Extremity Compression (together, the "Total Addressable Market").

We estimate that the U.S. PNI has a potential total addressable market for our current product portfolio of $2.7 billion. Estimating the Total Addressable Market for nerve repair is challenging as there is not a simple data source for the incidence of peripheral nerve issues. This is further complicated by the fact that nerves can be injured through a variety of traumatic and surgical injuries and can be impacted from a patient's head to toe. In addition, we believe nerves are often one of many structures injured in a trauma (i.e., amputation) or in surgery and the incidence of these nerve injuries are often not coded or tracked. Quantifying the procedures involving nerve repair may also be challenging. While selected trauma and surgical procedures are dedicated to the repair of nerves, most of the incidence of nerve repair is a step in a larger trauma or surgical procedure. Current Procedural Terminology ("CPT") codes exist for surgeons to code for nerve repair; however, we believe the data substantially underestimates the total number of nerves repaired. Physicians are encouraged to document all steps of procedures, but open trauma often involves many surgical steps, and CPT codes may be inclusive of each other or may not be documented or reported in billing records. As a result, we believe CPT coding underrepresents the total number of nerve repairs performed in trauma. Because we believe CPT claims are not fully representative of the true volumes of nerve repair surgery, we follow an "empirical" methodology to estimate the Total Addressable Market – using published clinical literature and procedure databases to make what we believe are the most objective assumptions.

Trauma

The "Trauma" portion of the Total Addressable Market encompasses traumatic PNI throughout the body, with approximately 95% of injuries affecting upper and lower extremity nerves. We estimate that the Trauma portion of the Total Addressable Market is approximately $1.9 billion based upon epidemiological studies regarding the general number of trauma patients, clinical literature review reporting PNI incidence, and physician interviews. We have estimated the portion of these nerve repair procedures due to trauma that would require Gap Repair, Primary Repair and/or Nerve Protection and applied, as we believed was appropriate in each procedure segment, the number of units and average sales price of Avance Nerve Graft and the average market price for nerve connectors, and nerve protectors to determine the probable Total Addressable Market.

OMF

We estimate that the OMF portion of the Total Addressable Market is approximately $300 million annually, based upon research indicating that approximately 56,000 PNI occur in the U.S. each year related to third molar surgeries, anesthetic injections, dental implants, orthognathic surgery, and mandibular resection procedures. We have applied the average sales price of the Avance Nerve Graft, Axoguard Nerve Connector, and Axoguard Nerve Protector that address such PNI to derive the OMF portion of the estimated Total Addressable Market.

Breast

We estimate that the Breast portion of the Total Addressable Market is approximately $250 million. Currently, when a patient undergoes autologous breast reconstruction after a mastectomy, the patient receives the shape of a natural breast, but often times experiences little to no return of sensory feeling. In certain cases, sensation can be returned to the breast area with the use of our products through an innovative surgical technique called Resensation®. We believe that the ideal breast reconstruction should restore breast size, shape, symmetry, and softness, as well as sensation, without the potential risks and co-morbidity associated with autograft. We believe the Resensation technique incorporates a patient's desire for the opportunity to return sensation to their breasts with a reproducible and efficient surgical approach for reconstructive plastic surgeons.

Upper Extremity Compression

PNI caused by recurrent carpal tunnel syndrome and cubital tunnel syndrome constitutes the "Upper Extremity Compression" portion of the Total Addressable Market. We estimate that the Upper Extremity Compression portion of the Total Addressable Market is approximately $270 million, or 130,000 procedures. We estimate there are approximately 488,000 primary carpal tunnel and 95,000 primary cubital tunnel relief surgeries performed annually in the U.S. We estimate that approximately 97,500 carpal tunnel revision surgeries and 32,400 total cubital tunnel procedures are addressable each year in the U.S. to mitigate the recurrence of symptoms. These revision and primary surgeries are required due to compression of the peripheral nerve associated with soft tissue attachments from the surrounding tissue or tissue infiltration entrapping the nerve. To prevent additional recurrences, surgeons will opt for a Nerve Protection which includes a product such as the Axoguard Nerve Protector. To derive the carpal and cubital tunnel revision portion of the Total Addressable Market, we multiplied the average market sales price of Axoguard Nerve Protectors by the number of estimated procedures.

Although distribution and sales of products in the Trauma, OMF, Breast and Upper Extremity Compression portions of the Total Addressable Market constitute our primary revenue sources today, market expansion opportunities in lower extremity surgery, head and neck surgery, urology and the surgical treatment of pain offer us expanded revenue opportunities. The Company has begun an expansion into the surgical treatment of pain with an initial focus on traumatic injuries, including amputation, and orthopedic surgeries such as total hip arthroplasty, total knee arthroplasty, knee arthroscopy, Morton's neuroma, foot and ankle procedures, and wrist arthroscopy. The size of the pain market opportunity is challenging to identify as the cause of the chronic pain is often not diagnosed and there has not historically been a surgical treatment to resolve the cause of the pain. The Company believes the market opportunity is sufficient to apply selected resources to the opportunity and there is a significant patient and societal need to reduce the use of pharmacologic solutions, including opioids.

Axogen's Product Portfolio

Avance Nerve Graft

Avance Nerve Graft is a biologically active nerve implant with more than ten years of comprehensive clinical evidence and more than 50,000 implants since launch. Avance Nerve Graft is intended for the surgical repair of peripheral nerve transections to support regeneration across the defect (a gap created when the nerve is severed). It is intended to act as a structural bridge in order to guide and support axonal regeneration across a peripheral nerve gap caused by traumatic injury or surgical intervention. Avance Nerve Graft is decellularized and sterile processed human peripheral nerve tissue. Axogen developed Avance Nerve Graft by following the guiding principle that the human body created the optimal peripheral nerve structure. Axogen, through its licensing efforts and research, developed the Avance Method™, a proprietary method for processing recovered human peripheral nerve tissue in a manner that preserves the essential structure of the ECM while cleansing away cellular and noncellular debris. Avance Nerve Graft provides the natural peripheral nerve structure of a nerve, including the native laminin to guide the regenerating nerve fibers. The nerve ECM is additionally processed to remove a natural inhibitor to regeneration called chondroitin sulphate proteoglycan.

Axogen believes that Avance Nerve Graft is the first off-the-shelf human nerve allograft for bridging nerve transections. Avance Nerve Graft is comprised of bundles of small diameter endoneurial tubes that are held together by an outer sheath called the epineurium. Avance Nerve Graft has been processed to remove cellular and noncellular factors such as cells, fat, blood, and axonal debris, while preserving the three-dimensional laminin lined tubular bioscaffold (i.e., microarchitecture), epineurium and microvasculature of the peripheral nerve. After processing, Avance Nerve Graft is flexible and pliable, and its epineurium can be sutured in place allowing for tension-free approximation of the proximal and distal peripheral nerve stumps. During the healing process, the body revascularizes and gradually remodels the graft into the patient's own tissue while allowing the processed peripheral nerve allograft to physically support axonal regeneration across the peripheral nerve transection. Avance Nerve Graft does not require immunosuppression for use.

With lengths up to 70 mm and diameters up to 5 mm, Avance Nerve Graft allows surgeons to choose and trim the implant to the correct length for repairing the relevant peripheral nerve gap, as well as to match the diameter to the proximal and distal end of the severed peripheral nerve. Avance Nerve Graft is stored frozen and utilizes packaging that maintains the graft in a sterile condition. The packaging is typical for medical products so the surgical staff is familiar with opening the package for transfer of Avance Nerve Graft into the sterile surgical field. Such packaging also provides protection during shipment and storage and a reservoir for the addition of sterile fluid to aid in thawing the product. Avance Nerve Graft thaws in less than 10 minutes, and once thawed, it is ready for implantation.

Avance Nerve Graft provides the following key advantages:

- A three-dimensional bioscaffold for bridging a peripheral nerve gap;
- A biologically active nerve therapy with more than 10 years of comprehensive clinical evidence;
- No patient donor-nerve surgery, therefore no comorbidities associated with a secondary surgical site;
- Available in a variety of diameters up to 5mm to meet a range of anatomical needs;
- Available in a variety of lengths up to 70mm, to meet a range of gap lengths;
- Decellularized and cleansed ECM;
- Implanted without the need for immunosuppression, remodels into patient's own tissue;
- Structurally supports the body's own regeneration process;
- Handles similar to an autograft, and is flexible and pliable;
- Alleviates tension at the repair site;
- Three-year shelf life; and
- Supplied sterile.

Axoguard Nerve Connector

Axoguard Nerve Connector is a coaptation aid used to align and connect severed peripheral nerve ends in a tensionless repair. The product is in a tubular shape with an open lumen on each end where the severed peripheral nerve ends are placed. It is typically used when the gap between the peripheral nerve ends is 5mm or less in length. Axoguard Nerve Connector is made from a processed porcine ECM that allows the body's natural healing process to repair the peripheral nerve while its tube shape isolates and protects the transected nerves during the healing process. During healing, the patient's own cells incorporate into the ECM product to remodel and form a tissue similar to the outermost layer of the peripheral nerve (nerve epineurium). Axoguard Nerve Connector is provided sterile, for single use only, and in a variety of sizes to meet the surgeon's needs.

Axoguard Nerve Connector can be used:

- As an alternative to direct suture repair;
- As a peripheral nerve coaptation; Connector-Assisted Repair®;
- To aid coaptation in direct repair, grafting, or cable grafting repairs; and
- To reinforce the coaptation site.

Axoguard Nerve Connector has the following advantages:

- Processed intact porcine ECM with an open, porous structure that allows for cell infiltration and remodeling;
- Designed as a coaptation aid for tensionless repair of transected or severed peripheral nerves;
- Alleviates tension at the repair site;
- Remodels into the patient's own tissue;
- Reduces the number of required sutures (versus direct repair with suture);
- Allows surgeon to move sutures away from the repair site which may minimize inflammation and aid nerve regeneration;
- Reduces potential for fascicular mismatch;
- Allows visualization of underlying peripheral nerve ends;
- Available in seven different diameters and two different lengths to address a variety of nerve repair situations;
- Strong and flexible, easy to suture; and
- Stored at room temperature with a minimum of 18-month shelf life.

Axoguard Nerve Protector

Axoguard Nerve Protector is a product used to protect and wrap damaged peripheral nerves and reinforce reconstructed nerve gaps while preventing soft tissue attachments. It is designed to protect and isolate the peripheral nerve during the healing process after surgery by creating a barrier between the nerve tissue and the surrounding tissue bed. The product is delivered in a slit tube format allowing it to be wrapped around peripheral nerve structures. Axoguard Nerve Protector is made from a processed porcine ECM. During healing, the ECM remodels allowing the protector to separate the peripheral nerve from the surrounding tissue. Axoguard Nerve Protector competes against off-the-shelf biomaterials such as reconstituted bovine collagen

as well as the use of the patient's own tissue such as vein and hypothenar fat pad wrapping. Axoguard Nerve Protector is provided sterile, for single use only, and in a variety of sizes to meet the surgeon's needs.

Axoguard Nerve Protector can be used to:

- Separate and protect the nerve from the surrounding tissue during the healing process;
- Minimize risk of soft tissue attachments and entrapment in compressed peripheral nerves;
- Protect peripheral nerves in a traumatized wound bed; and
- Reinforce a coaptation site.

Axoguard Nerve Protector has the following advantages:

- Processed porcine submucosa ECM used to reinforce a coaptation site, wrap a partially severed peripheral nerve or protect peripheral nerve tissue;
- Creates a protective layer that isolates and protects the peripheral nerve in a traumatized wound bed;
- Remodels into the patient's own tissue;
- Easily conforms and provides 360-degree wrapping of damaged peripheral nerve tissue;
- Allows the body's natural healing process to repair the nerve;
- Minimizes the potential for soft tissue attachments and peripheral nerve entrapment by physically isolating the nerve during the healing process;
- Allows peripheral nerve gliding;
- Strong and flexible, plus easy to suture;
- Is available in five different widths and two different lengths to address a variety of peripheral nerve repair situations; and
- Stored at room temperature with a minimum of 24-month shelf life.

Avive Soft Tissue Membrane

Avive Soft Tissue Membrane ("Avive") is processed human umbilical cord membrane that may be used as a resorbable soft tissue covering to separate tissues in the surgical bed. Avive is provided sterile and in a variety of sizes to meet the surgeon's surgical needs. Avive can be used to separate tissues in the surgical bed as a permeable membrane. As previously announced, we suspended the market availability of Avive Soft Tissue Membrane ("Avive") effective June 1, 2021, and we continue discussions with the FDA to determine the appropriate regulatory classification and requirements for Avive. The suspension was not based on any safety or product issues or concerns with Avive. We seek to return Avive to the market, although we are unable to estimate the timeframe or provide any assurances that a return to the market will be achievable. Avive has historically represented approximately 5% of our revenues through the second quarter of 2021, and no Avive revenue was recorded in the third and fourth quarters of 2021.

Avive has the following advantages:

- Umbilical cord amniotic membrane that is naturally resorbable;
- Is non-immunogenic;
- Processed to preserve the natural properties of umbilical cord amniotic membrane;
- Comprised of umbilical cord amniotic membrane which is up to eight times thicker than placental amniotic membrane alone;
- Long lasting (in animal studies, stays in place for at least 16 weeks);
- Easy to handle, suture or secure during a surgical procedure;
- Conforms and stays in place at the application site;
- Chorion free (reducing the likelihood of immune response); and
- Room temperature storage with a two-year shelf life.

Axoguard Nerve Cap

Axoguard Nerve Cap is a proprietary porcine submucosa ECM product used to protect a peripheral nerve end and separate the nerve from the surrounding environment to reduce the development of symptomatic or painful neuroma.

Nerves are often cut in a variety of surgeries and every nerve that is cut and not reconstructed forms an entangled mass of disorganized nerve and fibrous tissue that could cause debilitating pain called a symptomatic neuroma. Neuromas are a cause of pain for those patients who complain of chronic post-surgical pain, including in amputees which may lead to an inability to use their prosthesis. Despite more than 30 different treatment methods, it is our belief that neuromas continue to be an unresolved problem in microsurgery. We believe the Axoguard Nerve Cap can address these painful neuroma and better address nerve pain than other methods, including pharmacotherapy and chemical injections, among others. Axoguard Nerve Cap can be used to reduce the development of symptomatic or painful neuroma formation.

Axoguard Nerve Cap has the following advantages:

- Separates the nerve end from surrounding tissue, neurotrophic factors and mechanical stimulation;
- Reduces painful neuroma formation;
- Allows for anchoring of a nerve end or stump to nearby tissue structure;
- Material gradually remodels into the patient's own tissue to protect the nerve end; and
- Semi-translucence allows for visualization of nerve ends or stumps and easy visualization for suture placement.

Axotouch Two-Point Discriminator

The Axotouch Two-Point Discriminator tool can be used to measure the innervation density of any surface area of the skin. The discs are useful for determining sensation after damage to a peripheral nerve, following the progression of a repaired peripheral nerve, and during the evaluation of a person with possible peripheral nerve damage, such as compression. The Axotouch Two-Point Discriminator is a Class 1 510(k) exempt medical device.

The Axotouch Two-Point Discriminator tool is a set of two aluminum discs each containing a series of prongs spaced between two to 15 millimeters apart. Additionally, 20 and 25 millimeter spacing is provided. A circular depression on either side of the disc allows ease of rotation. The discs can be rotated between a single prong for testing one-point and any of the other spaced prongs for testing two-point intervals.

Axotouch Two-Point Discriminator has the following advantages:

- Capable of measuring the innervation density of any skin surface;
- Portable and easy to use;
- Strong aluminum design is resistant to bending;
- Bright colors allow for clear discrimination between discs;
- Clear numbering allows users to interpret results; and
- Reusable carry case protects discs.

Acroval Neurosensory and Motor Testing System

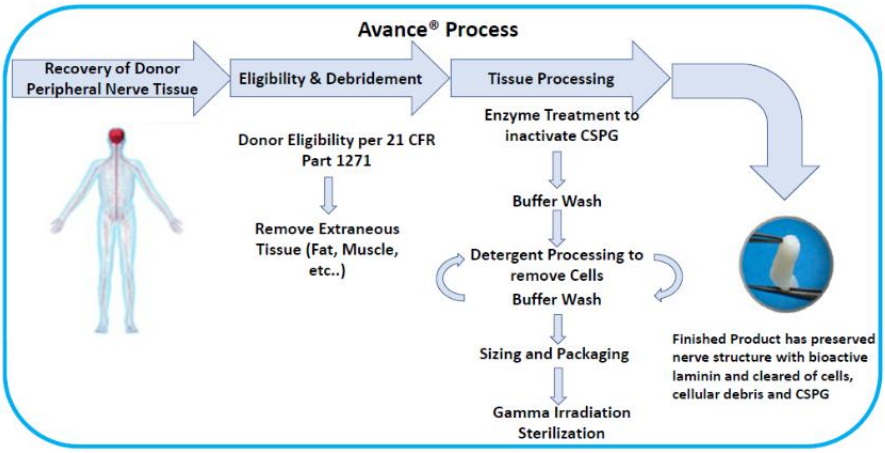
To pursue our mission most effectively, we have made a strategic decision to place our full focus on innovations within our surgical solutions portfolio. Effective November 2019, Axogen discontinued all sales of the Acroval Neurosensory and Motor Testing System. We continue to provide service and support for the existing systems in the marketplace.

Tissue Recovery and Processing for Avance Nerve Graft and Avive Soft Tissue Membrane

Avance Nerve Graft Processing Overview

Axogen has developed the Avance Method, an advanced and proprietary technique to process Avance Nerve Graft from donated human peripheral nerve tissue. The Avance Method requires special training over several months for each manufacturing associate who processes Avance Nerve Grafts. The processing and manufacturing system for Avance Nerve

Graft has required significant capital investment, and we seek to continually improve our manufacturing and quality assurance processes and systems.Axogen's Avance Method is depicted as follows:



Avance Nerve Graft and Avive Soft Tissue Membrane Processing

Axogen's Avance Method and processing of Avive Soft Tissue Membrane consists of several steps, including peripheral nerve tissue, in the case of Avance, and umbilical cord, in the case of Avive, recovery/acquisition and testing, donor medical review and release, processing, packaging, and sterilization to meet or exceed all applicable FDA, state, and international regulations and American Association of Tissue Banks ("AATB") standards. We have a number of contracts with recovery and acquisition agencies to supply peripheral nerve tissue and umbilical cord and believe these contracts, and the ability to enter into additional contracts, will provide us with the tissues we require for our Avance and Avive implants. As an FDA registered tissue establishment, Axogen utilizes both its own personnel and a variety of subcontractors for recovery/acquisition, storage, testing, processing and sterilization of the donated peripheral nerve and umbilical cord tissue. Additionally, independent Good Manufacturing Practice ("GMP") and Good Laboratory Practice ("GLP") compliant laboratories have been contracted by Axogen and its subcontractors to perform testing from donor eligibility through release. The safety of Avance Nerve Graft and Avive Soft Tissue Membrane is supported by donor screening, process validation, process controls, and validated terminal sterilization methods. The Axogen Quality System has built in redundancies that are meant to control the release of each product for implantation only after such product meets our stringent quality control and product requirements.

Avance Nerve Graft and Avive Soft Tissue Membrane Tissue Recovery/Acquisition and Processing Facility

Axogen partners with other FDA registered tissue establishments and AATB accredited recovery/acquisition agencies or recovery/acquisition agencies in compliance with FDA, state and international regulations and AATB standards for human tissue recovery. After consent for donation is obtained, donations are screened and tested in detail for safety in compliance with FDA, state and international regulations and AATB standards on communicable disease transmission. Axogen processes and packages Avance Nerve Graft and Avive Soft Tissue Membrane using its employees and equipment pursuant to a License and Services Agreement, as amended (the "CTS Agreement") with Community Blood Center (doing business as Community Tissue Services) ("CTS"), in Dayton, Ohio. CTS is an FDA registered tissue establishment and an AATB accredited organization. Axogen voluntarily suspended the market availability of Avive Soft Tissue Membrane on June 1, 2021.

The current CTS Agreement terminates December 31, 2023, subject to earlier termination by either party at any time for cause (subject to the non-terminating party's right to cure, in certain circumstances), or without cause upon 6 months prior notice. Under the CTS Agreement, Axogen pays CTS a facility fee for clean room/manufacturing, storage, and office space. CTS also provides services in support of Axogen's manufacturing such as routine sterilization of daily supplies, providing disposable supplies and microbial services, and office support. The service fee is based on a per donor batch rate. The CTS facility provides a cost effective, quality controlled and licensed facility. Axogen's processing methods and process controls have been developed and validated to ensure product uniformity and quality. Pursuant to the CTS Agreement, Axogen pays license fees on a monthly basis to CTS. See "Item 8. Financial Statements and Supplementary Data – Notes to Consolidated Financial Statements - Note 14 - Commitments and Contingencies - Service Agreements."

Axogen is renovating a property located near the CTS facility, the Axogen Processing Center facility (the "APC Facility") comprised of a 107,000 square foot building on approximately 8.6 acres of land. It is expected that renovation and validation will be completed before the termination date of the CTS Agreement to provide a new processing facility that can be included in our Biologics License Application ("BLA") for Avance Nerve Graft. The capacity of the property once operational, along with the ability for expansion, is expected to provide processing capabilities that will meet our intended sales growth. Axogen has obtained certain economic development grants from state and local authorities totaling $2,685 including $1,250 of cash grants to offset costs to acquire and develop the APC Facility. The economic development grants are subject to certain job creation milestones by 2023 and related contingencies. Axogen has received approximately $1,188 from these grants through December 31, 2021. These grants have claw back clauses if Axogen does not meet these job creation milestones by 2023. See "Item 8. Financial Statements and Supplementary Data – Notes to Consolidated Financial Statements - Note 14 - Commitments and Contingencies - Service Agreements."

Avance Nerve Graft and Avive Soft Tissue Membrane Packaging

After processing, the packaging operation is performed in a controlled environment at the CTS facility. Each Avance Nerve Graft and Avive Soft Tissue Membrane is visually inspected and organized by size into finished product codes. The tissue implant is then packaged in primary packaging. The outer pouch acts as the primary sterility and moisture barrier.

Avance Nerve Graft and Avive Soft Tissue Membrane Sterilization and Labeling

After being processed and packaged, Avance Nerve Graft and Avive Soft Tissue Membrane are then terminally sterilized and shipped to Axogen's Burleson, Texas distribution facility (the "Distribution Facility"). There the products receive their final labels and are released following a final stringent technical and quality review. Orders for Avance Nerve Graft and Avive Soft Tissue Membrane are placed with Axogen's customer care team and the products are packaged and shipped from the Distribution Facility.

Avance Nerve Graft and Avive Soft Tissue Membrane Product Release

Axogen has established quality procedures for review of tissue recovery, relevant donor medical record review and release to processing that meet or exceed FDA requirements as defined in the Code of Federal Regulations ("CFR") 21 CFR Part 1271, state regulations, international regulations and AATB standards. The Axogen Quality System meets the requirements set forth under 21 CFR Part 1271 for Human Cells, Tissues and Cellular and Tissue-Based Products, including Good Tissue Practices ("GTP") and is compliant with the 21 CFR Part 820 Quality System Regulations ("QSR"). Furthermore, Axogen utilizes validated processes for the handling of raw material components, environmental control, processing, packaging, and terminal sterilization. In addition to ongoing monitoring activities for product conformity to specifications and sterility, shipping methods have been validated in accordance with applicable industry standards.

Manufacturing of Axogen Products Other Than Avance Nerve Graft and Avive Soft Tissue Membrane

Manufacturing for the Axoguard Product Line

The Axoguard product line is manufactured by Cook Biotech Incorporated, in West Lafayette, Indiana ("Cook Biotech"), which was established in 1995 to develop and manufacture implants utilizing porcine ECM. Axogen decided to expand its portfolio of products and felt that the unique ECM material offered by Cook Biotech provided the combination of properties needed in nerve reconstruction. Cook Biotech's ECM material is pliable, capable of being sutured, translucent and allows the patient's own cells to incorporate into the ECM to remodel and form a tissue similar to the nerve's epineurium. Cook Biotech has its own source of the raw material for the ECM material and manufactures Axoguard products from such sources.

In August 2008, Axogen entered into an agreement with Cook Biotech, amended in February 2012 and February 26, 2018 (the "Distribution Agreement"), to distribute its ECM technology in the form of the Surgisis® Nerve Cuff, the form of a nerve wrap or patch, or the form of any other mutually agreed to configuration. The Surgisis products were rebranded under Axogen's Axoguard name and consist of the Axoguard Nerve Connector and Axoguard Nerve Protector. Axogen's distribution rights are worldwide in the field of the peripheral and central nervous system but excluding use of the products in the oral cavity for endodontic and periodontal applications and OMF surgery solely as they relate to dental, soft or hard tissue repair, or reconstruction. We believe the exclusion does not limit our identified OMF market, but expansion into certain additional OMF market areas could be limited to other Axogen products not subject to the Distribution Agreement.

Axogen developed, patented, and obtained regulatory approval on the Axoguard Nerve Cap, which in its current configuration is made with Cook Biotech's ECM material. Pursuant to the Nerve End Cap Supply Agreement dated June 27, 2017 (the "Supply Agreement"), Cook Biotech is the exclusive contract manufacturer of the Axoguard Nerve Cap and both

parties have provided the other party the necessary licenses to their technologies for operation of the Supply Agreement. With respect to the license from Cook Biotech, Axogen is able to sell the Axoguard Nerve Cap worldwide in the field of the peripheral and central nervous system, but subject to the same exclusions as Axoguard Nerve Connector and Axoguard Nerve Protector.

The Distribution Agreement terminates on June 30, 2027. Although the agreement requires certain minimum purchases, through mutual agreement, the parties have not established such minimums and to date have not enforced such provision, and also establishes a formula for the transfer cost of the Axoguard Nerve Connector and Axoguard Nerve Protector. The Supply Agreement has a term through August 27, 2027.

Manufacturing for the Axotouch Two-Point Discriminator

The Axotouch Two-Point Discriminator was contract manufactured by Viron Technologies, doing business as Cybernetics Research Laboratories ("CRL"), in Tucson, Arizona. CRL supplied the Axotouch unpackaged, and they are packaged at Axogen's distribution facility in Burleson, Texas. We believe we have enough inventory on hand to support sales through 2024.

Sales and Marketing

Overview

Axogen is focused on developing the peripheral nerve repair and regeneration market, committed to improving awareness of new surgical peripheral nerve repair options and is building additional scientific and clinical data to assist surgeons and patients in making informed choices with respect to the repair of peripheral nerve injuries. Axogen believes that there is an opportunity to improve current approaches to peripheral nerve repair and that its approach will solidify its position as a leader in the field of peripheral nerve repair products. The following provides the key elements of Axogen's sales and marketing strategy.

Increase Awareness of Axogen's Products

Prior to the introduction of Axogen's portfolio of peripheral nerve repair products, surgeons had a limited number of options available to surgically repair damaged or transected peripheral nerves. Axogen entered the market to improve the standard of care for nerve injury patients. Axogen intends to increase market penetration and share by increasing awareness of the impact of nerve damage on quality of life and improving the adoption of nerve repair techniques and Axogen's products through the continued use of educational conferences and presentations, surgical resident and fellow training, scientific publications, digital communication, and a knowledgeable and professional sales team. Axogen works to increase the use of its products within active accounts as well as expand the overall customer base by adding new active accounts. Axogen defines an active account as an account that has typically gone through the committee approval process, has at least one surgeon who has converted a portion of his or her treatment algorithms for peripheral nerve repair to the Axogen portfolio and has ordered Axogen products at least six times in the last 12 months. As Axogen's business continues to grow, Axogen has transitioned to reporting a new account metric that it believes demonstrates the strength of adoption and potential revenue growth in accounts that have developed a more consistent use of Axogen's products in their nerve repair algorithm. Axogen refers to these as core accounts which it defines as accounts that have purchased at least $100,000 in the past 12 months. Axogen is focused on plastic reconstructive surgeons and orthopedic and plastic hand surgeons who perform surgeries on patients suffering traumatic nerve damage or transection, on oral and maxillofacial surgeons who repair damaged oral nerves, and on plastic reconstructive surgeons who perform autologous flap breast neurotization.

Expand Clinical and Scientific Data Regarding the Performance of Axogen Products

Generating clinical data is an important component of Axogen's marketing strategy. As of December 31, 2021, there have been over one hundred and eighty-one peer reviewed clinical publications related to Axogen products. Certain of these publications contain data on multiple products. Axogen will continue to accept subjects, for which there are more than 2,500 Avance nerve repairs enrolled to date, in its RANGER ® clinical study (defined below in "Government Regulations"), a utilization registry of Avance Nerve Graft. An additional arm of the RANGER study has been initiated, tracking neurotization outcomes in breast reconstruction (Sensation-NOW®). Eleven of the above-mentioned publications and more than 70 scientific conference presentations have been generated to date from the registry. ReThink Pain™, a multicenter observational registry in the area of nerve pain and the surgical treatment of pain, has been initiated and enrollment is underway. A multicenter, prospective, randomized, comparative pilot study of hollow tube conduit and Avance Nerve Graft has completed subject enrollment and outcome follow-up and has been published. Case series in digital nerve repair have been published from the Mayo Clinic, Georgetown University Medical Center and Philadelphia Hand Center, and case series in OMF have been published from UT Southwestern and University of Illinois-Chicago. A number of additional investigator-initiated case reports,

studies, and publications have been completed, including breast neurotization, mandible reconstruction, compressive neuropathies, and the surgical treatment of pain. Case series in brachial plexus, neurotization of breast reconstruction, and the surgical treatment of pain are also being developed. Axogen also supports outside research and will continue to work with investigators on grants with a translational focus.

RECON, a phase 3 pivotal, multicenter, prospective, randomized, comparative study of hollow tube conduits and Avance Nerve Graft to support the transition of Avance to a biological product has completed enrollment and follow-up of all subjects and is in data analysis and interpretation. See "Government Regulations – Clinical Trials." A multicenter, prospective, randomized, and subject blinded study of Axoguard Nerve Cap as compared to neurectomy alone for the treatment of symptomatic neuroma (REPOSE) is currently enrolling. ASSIST, a registry study of Avive Soft Tissue Membrane in acute trauma has completed follow-up of all enrolled subjects. Sensation-NOW (defined below in "Axogen Clinical Trials"), a RANGER (defined below in "Government Regulations") study arm for breast neurotization continues to enroll, as does the additional expansion arm Matched Autograft and Tube Conduit Case Control Cohort Arm of RANGER ("MATCH ^{SM}"), a contemporary cohort control which provides reference controls for nerve autograft and manufactured conduits from participating clinical study centers.

Commitment to the Education of Best Practices in Peripheral Nerve Repair

Axogen has established educational conferences and presentations and surgical resident and fellow training that we believe has positioned us as a leader in providing peripheral nerve repair best practices. In 2021, we trained more than three-quarters of hand and microsurgery surgeon fellows in the U.S. through such courses and training, including the use of virtual education programs necessitated by the COVID-19 pandemic. The Company has historically provided education on peripheral nerve repair through in-person national programs, including its "Advances and Best Practices in Nerve Repair" as well as local and regional educational events. Due to the COVID-19 pandemic, we transitioned in April 2020 largely to a virtual platform for surgeon education offering multiple educational webinars. In 2021, we continued to utilize and expand hybrid and virtual education events and also returned to in-person educational events in the last half of 2021. In 2022, we expect to again offer multiple educational webinars including in-person surgeon education programs. Our education efforts also continue to include online tools and discussion forums such as Nerve Matters, an online community of peripheral nerve surgeons where the surgeons can ask questions, present cases, and share findings in the area of peripheral nerve repair.

Focused on developing deeper penetration with our existing surgeon customers through development of long-term users of the Avance Nerve Graft in our largest market opportunity of extremity trauma

Axogen provides full sales and distribution services through both a direct sales force and independent sales agencies. As of December 31, 2021, Axogen had 115 direct sales professionals in the U.S. and approximately 28 independent sales agencies in the U.S. In 2021, approximately 88% of global product revenue came from the direct channel. We believe that near-term growth can be supported first through expanded productivity of our existing sales force as they go deeper with existing surgeons and accounts and then by adding additional surgeons and accounts. We expect the number of direct sales professionals to increase over time. Additionally, we have successfully utilized a hybrid commercial approach that includes the use of independent agencies in more remote geographies to provide appropriate local support for surgeons, without the travel time required of a direct sales representative. We anticipate that we will continue to add to the number of independent sales agencies as we continue to drive higher productivity and efficiency with our direct sales force.

Our products are available and sold in 17 countries outside the U.S. through a number of independent in-country distributors. We provide support and resources for independent agencies and distributors both within and outside the U.S. We provide our products to hospitals, surgery centers and military hospitals, calling on surgeons, including plastic reconstructive surgeons, orthopedic and plastic hand surgeons, and certain oral and maxillofacial surgeons to review the benefits of our products. While surgeons make the decision to implant our products in appropriate patients, hospitals make the decision to purchase the products from us. In today's budget constrained environment, hospital committees review new technologies for cost effectiveness as well as quality. We believe that we have been successful in meeting the needs of these hospital committees by demonstrating the cost/benefit of our products and providing a fair value to the hospital.

Expand the Product Pipeline and Applications in Peripheral Nerve Repair

Axogen has developed and continues to develop new and next generation products to support surgeons in their needs for repairing damaged or transected peripheral nerves. Axogen believes additional opportunities exist to develop or acquire complementary products in peripheral nerve repair. In addition, there are opportunities to expand the existing portfolio of products in new applications of peripheral nerve repair in lower extremity surgery, head and neck surgery, urology, and the surgical treatment of pain.

Avance Nerve Graft Performance

Axogen has worked with leading institutions, researchers, and surgeons to support innovation in the field of surgical peripheral nerve repair. We believe Axogen's RANGER study (defined below in "Government Regulations") is the largest multi-center clinical study conducted in peripheral nerve gap repair. Axogen is also conducting the RECON study (defined below in "Axogen Clinical Trials"). This study is a phase 3 trial to support its BLA for the Avance Nerve Graft. See "Government Regulations - Clinical Trials - Axogen Clinical Trials".

International Opportunity for Revenue

Axogen currently focuses primarily on the U.S. market, with additional foreign distribution and sales in Canada, Germany, UK, Spain, South Korea, and certain other countries. The need for the surgical repair of damaged or transected nerves is a global opportunity. Through its revenue outside the U.S., Axogen has demonstrated the capability to take its current peripheral nerve repair surgical portfolio into new geographical markets. Axogen currently has European Union ("E.U.")-wide registration only for Axoguard Nerve Connector and Axoguard Nerve Protector as approval/registration for Avance Nerve Graft as human tissue is required in each individual country. Avance Nerve Graft has been granted marketing authorization in Germany and direct commercial operations began in 2022. Currently, Axotouch Two-Point Discriminator is available only in the U.S. Such introduction is subject to meeting the appropriate regulatory standards of particular countries and any appropriate E.U.-wide regulation or directive. In addition to regulatory approval, reimbursement approval is necessary to achieve material product adoption in most countries. Avance Nerve graft has achieved NICE approval in the UK for digital nerve repair and reimbursement approval in South Korea for repairs up to 50mm in length. To date, revenue from international distribution and sales have not been material, there are no material risks associated with foreign operations and we do not have dependencies as to international revenue. See "Risk Factors – Our operations must comply with FDA and other governmental requirements."

Research and Development

Axogen believes it provides the most extensive product portfolio for peripheral nerve injuries available. Our current development focus is to expand clinical data in both traumatic peripheral nerve repair and other surgical applications and to develop product line extensions of the Avance and Axoguard products. Other peripheral nerve repair technologies may also be developed.

Axogen works with academic institutions in the expansion of treatments for peripheral nerve and is involved in a number of grants from government agencies related to nerve repair or use of our products and/or technologies. For the year ended December 31, 2021, Axogen spent approximately $24.2 million on total research and development expenses for product and clinical development.

Competition

The medical device and biotechnology industries are characterized by rapidly advancing technologies, intense competition, and a strong emphasis on proprietary products. As such, Axogen cannot predict what products may be offered in the future that may compete with Axogen's products. In the peripheral nerve repair market, Axogen competes primarily against all transected and non-transected peripheral nerve repair approaches, including direct suture repair, autograft, and hollow-tube nerve conduits and materials used to wrap and protect damaged peripheral nerve tissue. Finally, there are numerous companies that offer amnion products in a variety of formats, primarily in the area of wound care, which could be competitive with Axogen's Avive product.

Because the requirements of the biomaterials used in peripheral nerve repair can vary based on the severity and location of the damaged nerve, the size and function of the nerve, surgical technique, and patient preference, Axogen's peripheral nerve repair products compete against both autograft materials (nerve in the case of a bridging repair and vein or fat in the case of a nerve protection repair), and a limited number of off-the-shelf alternatives for grafting and protecting. Competitive aspects of our products focus on their overall value proposition and suitability for specific applications and can include composition and structure of the material, ease of use, clinical evidence, handling, and price. Axogen's major competitors for off-the-shelf repair options in hollow-tube conduits and bio-absorbable wraps are Integra LifeSciences Holding Corporation, Baxter International, Inc., and Stryker Corporation.

Axogen believes any current or future competitors face the following important barriers to market entry as it relates to its peripheral nerve repair products. Axogen's intellectual property ("IP"), and that of its partners, including patents, patents-pending, trade secrets, and know how, is believed to be an important barrier for its Avance Nerve Graft and Axoguard products. Axogen has developed knowledge and experience in understanding and meeting FDA regulatory requirements for Avance Nerve Graft, including having made a substantial investment in conducting the pre-clinical and clinical testing necessary to support a submission for an FDA BLA. Additionally, Axogen believes its ability to offer a portfolio of products focused on

peripheral nerve repair provides a unique competitive position versus other entities that do not have this breadth of product offering. However, due to its limited resources, its smaller size, and its relatively early stage, Axogen believes it may face competitive challenges from larger entities and market factors that could negatively impact Axogen's growth, including competitors' introduction of new products and competitors' bundling of products to achieve pricing benefits.

Intellectual Property

Overview

Axogen protects its IP through a combination of patents, trademarks, trade secrets, and copyrights. In addition, Axogen safeguards its trade secrets and other confidential know-how, and carefully protects these and other IP rights when engaging with third parties. For example, Axogen requires vendors, contract organizations, consultants, advisors, and employees to execute confidentiality and nondisclosure agreements, and to appropriately protect any information disclosed to them by Axogen so as to preserve its confidential and/or trade secret status. Axogen also requires consultants, advisors, and employees to assign their rights to any IP arising out of their relationship with Axogen to Axogen.

License Agreements

Axogen has entered into license agreements with University of Florida Research Foundation (the "UFRF") and the University of Texas at Austin ("UTA"). Under the terms of these license agreements, Axogen holds exclusive worldwide licenses to underlying technologies used by Axogen in its Avance Nerve Graft. The license agreements include both the right to issued patents and patents pending in the U.S. and international markets. The effective term of the license agreements extends through the term of the related patents. Currently, Axogen pays royalties to UFRF and UTA specific to the licensed technologies related to Avance Nerve Graft.

Patents

As of the date of this Form 10-K, Axogen owns or is the exclusive licensee of about thirty issued U.S. patents, more than thirty-five pending U.S. patent applications (including those for which Axogen has received a notice of allowance) and more than one hundred and forty international patents and patent applications with regard to its peripheral nerve products and other related technologies.

With respect to our Avance Nerve Graft, we have patent protection in the U.S. through at least September 2023. In addition, we have a period of 12 years total exclusivity in the U.S. for reference product- meaning protection from biosimilars for 12 years.Finally, Axogen has Enforcement Discretion from the FDA allowing continued distribution under controls applicable to Human Cellular and Tissue-based Products ("HCT/P") with an agreed transition plan to a Biologic Product under a BLA. We believe a competitive processed peripheral nerve allograft would need to successfully complete BLA Phase I, II and III clinical studies prior to clinical release, the completion of which we believe would take at least eight years.

Axogen's policy is to seek patent protection for, or where strategically preferable, maintain as trade secret, the inventions that it considers important to its products and the development of its business. Axogen has sought, and will continue to seek, patent protection for select proprietary technologies and other inventions emanating from its research and development ("R&D"), including with respect to uses, methods, and compositions, in an effort to further fortify its IP stronghold in areas of importance to the company and its growing product portfolio. In instances that patent protection is not possible, product value to Axogen's portfolio can still be derived.

Trademarks, Trade Secrets and Copyrights

Axogen holds a significant portfolio of hundreds of registered and applied-for trademarks in the U.S. and worldwide. Protection of our trademarks allows Axogen to prevent competitors from, for example, using the same or a confusingly similar company name, or the same or confusingly similar product names within identified classes of goods that could otherwise wrongfully allow such competitors to capitalize on the Axogen brand, reputation, and goodwill, and thereby improperly bolster their sales or reputations through, for example, consumer confusion, a false indication of Axogen's endorsement, or of a false indication of corporate or contractual relationship with Axogen. Axogen polices and enforces its marks.

Axogen possesses trade secrets and material know-how in the following general subject matters: nerve and tissue processing, nerve repair, product testing methods, and pre-clinical and clinical expertise. Axogen has registered copyrights for training tools and artistic renderings. Additionally, Axogen entered into the Distribution Agreement and Supply Agreement with Cook Biotech for the Axoguard products. Cook Biotech believes it has know-how and trade secrets with respect to its ECM technology that provides certain competitive obstacles to protect Axogen's IP.

Government Regulations

U.S. Government Regulation Overview

Axogen's products are subject to regulation by the FDA, as well as other federal and state regulatory bodies in the U.S. and comparable authorities in other countries. In addition, its Avance Nerve Graft and Avive Soft Tissue Membrane must comply with the standards of the tissue bank industry's accrediting organization, the AATB.

Axogen distributes Axoguard Nerve Connector and Axoguard Nerve Protector products for Cook Biotech, and Cook Biotech is responsible for the regulatory compliance of these products. Cook Biotech is the contract manufacturer for our Axoguard Nerve Cap product and Axogen is responsible for the regulatory compliance of this product. Axoguard products are regulated as medical devices and subject to pre-market notification requirements under section 510(k) of the Federal Food, Drug, and Cosmetic Act (the "FD&C Act"), 21 CFR Part 820 ("Quality System Regulation"), and related laws and regulations. Cook Biotech has obtained a 510(k) pre-market clearance for Axoguard Nerve Connector from the FDA for the use of porcine small intestine submucosa for the repair of peripheral nerve transections where gap closure can be achieved by flexion of the extremity. Cook Biotech has also obtained a 510(k) pre-market clearance for Axoguard Nerve Protector for the repair of peripheral nerve damage in which there is no gap or where a gap closure is achieved by flexion of the extremity. We sell the 510(k) cleared devices under the trade names Axoguard Nerve Protector and Axoguard Nerve Connector.

Axogen also sells the Axoguard Nerve Cap product, which is classified by the FDA as a Class II device. The Axoguard Nerve Cap was cleared for market under 510(k) K163446. It is classified by FDA under 21 CFR 882.5275 (Nerve Cuff, product code: JXI).

Axogen is responsible for the regulatory compliance of Avive Soft Tissue Membrane, which Axogen suspended the market availability of effective June 1, 2021. We continue discussions with the FDA to determine the appropriate regulatory classification and requirements for Avive. The suspension was not based on any safety or product concerns with Avive. Axogen also distributes the Axotouch Two-Point Discriminator. This device is manufactured for Axogen and distributed from the Burleson Facility. It is a Class I device (general controls) that is exempt from pre-market notification and the Quality System Regulation requirements except for the Recordkeeping and Complaint file requirements. It is classified by FDA under 21 CFR 882.1200 (Two-point discriminator, product code: GWI).

FDA — General

FDA regulations govern nearly all the activities that Axogen performs, or that are performed on its behalf, to ensure that medical products distributed domestically or exported internationally are safe and effective for their intended uses. The activities the FDA regulates include the following:

- Product design, development, and manufacture;
- Product safety, testing, labeling, and storage;
- Pre-clinical testing in animals and in the laboratory;
- Clinical investigations in humans;
- Pre-marketing clearance, approval, or licensing;
- Record-keeping and document-retention procedures;
- Advertising and promotion;
- The import and export of products;
- Product marketing, sales, and distribution;
- Post-marketing surveillance and medical device reporting, including reporting of deaths, serious injuries, communicable diseases, device malfunctions, or other adverse events; and
- Corrective actions, removals and recalls.

Failure to comply with applicable FDA regulatory requirements may subject Axogen to a variety of administrative or judicially imposed penalties or sanctions and/or prevent it from obtaining or maintaining required approvals, clearances, or licenses to manufacture and market its products. It could also subject Axogen to enforcement actions or sanctions, such as agency refusal to approve pending applications, warning letters, product recalls, product seizures, total or partial suspension of production or distribution of products, injunctions, or civil monetary penalties or criminal prosecution.

FDA's Pre-market Clearance and Approval Requirements - Medical Devices

Unless an exemption applies, each medical device distributed commercially in the U.S. requires either a 510(k) pre-market notification submission or a Pre-Market Approval ("PMA") Application to the FDA. Medical devices are classified into one of

three classes—Class I, Class II, or Class III—depending on the degree of risk, the level of control necessary to assure the safety and effectiveness of each medical device and how much is known about the type of device. For devices first intended for marketing after May 28, 1976, pre-market review and clearance by the FDA for Class I and II medical devices is accomplished through the 510(k) pre-market notification procedure by finding a device substantially equivalent to a legally marketed Class I or II device, unless the device is exempt. The majority of Class I medical devices are exempt from the 510(k) pre-market notification requirement. Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting, or implantable devices for which Class II controls are inadequate to assure safety or effectiveness, and novel devices, including devices deemed not substantially equivalent to a previously cleared 510(k) device, are placed in Class III. Class III devices generally require an approved PMA prior to marketing.

A PMA must be supported by extensive data, including, but not limited to, technical, pre-clinical, clinical trials, manufacturing and labeling to demonstrate to the FDA's satisfaction, and the safety and effectiveness of the device.

Biological Product License Application (BLA) Pathway

Biological products require FDA approval of a BLA to be marketed. To be approved, a BLA must demonstrate the safety, purity, and potency of the product candidate based on results of pre-clinical studies and clinical trials. A BLA must also contain extensive Chemistry, Manufacturing and Controls ("CMC") and other manufacturing information, and the applicant must pass an FDA pre-approval inspection of the manufacturing facility or facilities at which the biologic product is produced to assess compliance with the FDA's current Good Manufacturing Practice ("cGMP") requirements. Satisfaction of FDA approval requirements for biologics typically takes several years and the actual time required may vary substantially based on the type, complexity, and novelty of the product. Axogen cannot be certain that any BLA approvals for its products will be granted on a timely basis, or at all.

The steps for obtaining FDA approval of a BLA to market a biologic product in the U.S. include:

- Completion of pre-clinical laboratory tests, animal studies, and formulation studies under the FDA's good laboratory practices regulations;
- Submission to the FDA of an Investigational New Drug application ("IND") for human clinical testing, which must become effective before human clinical trials may begin and which must include independent Institutional Review Board, ("IRB"), approval at each clinical site before the trials may be initiated;
- Performance of an adequate and well-controlled clinical trial in accordance with Good Clinical Practices to establish the safety and efficacy of the product for each indication;
- Submission to the FDA of a BLA, which contains detailed information about the CMC for the product, reports of the outcomes and full data sets from the clinical trials, and proposed labeling and packaging for the product;
- Satisfactory review of the contents of the BLA by the FDA, including the satisfactory resolution of any questions raised during the review;
- Satisfactory completion of an FDA Advisory Committee review, if applicable;
- Satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the product is produced to assess compliance with cGMP regulations, to assure that the facilities, methods, and controls are adequate to ensure the product's identity, strength, quality, and purity; and
- FDA approval of the BLA, including agreement on post-marketing commitments, if applicable.

Pre-clinical tests include laboratory evaluations of product chemistry, toxicity, and formulation, as well as animal studies. An IND sponsor must submit the results of the pre-clinical tests, together with manufacturing information and analytical data, to the FDA as part of the IND. Some pre-clinical testing may continue after the IND is submitted. The IND must become effective before human clinical trials may begin. An IND will automatically become effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions about issues such as the conduct of the trials and or supporting pre-clinical data as outlined in the IND. In that case, the IND sponsor and the FDA must resolve any outstanding FDA concerns or questions before clinical trials can proceed. Therefore, submission of an IND may not result in the FDA allowing clinical trials to commence.

Axogen met with the FDA Center for Biologics Evaluation and Research ("CBER") in July 2010 and, between July 2010 and November 2010, provided information to CBER that resulted in the FDA issuing a letter stating the agency's intent to exercise enforcement discretion with respect to the continued introduction or delivery for introduction into interstate commerce of Avance Nerve Graft assuming that certain conditions were met relating to the transition of Avance Nerve Graft from regulation as an HCT/P under Section 361 to a biological product under Section 351 of the Public Health Service Act. Specifically, the FDA is permitting Avance Nerve Graft to be distributed, subject to FDA enforcement discretion, provided that:

- Axogen transitions to compliance with Section 501(a)(2)(B) of the FD&C Act, the current cGMP regulations in 21 CFR Parts 210 and 211 and the applicable regulations and standards in 21 CFR Parts 600-610 prior to initiation of a phase 3 clinical trial designed to demonstrate the safety, purity, and potency of Avance Nerve Graft.
    - Axogen has performed several gap analyses of its quality system for compliance with 21 CFR Parts 210 and 211 and 600-610 regulations. The gap analyses have identified areas in which our quality system could improve with respect to compliance with the regulations. The transition is in process and we periodically review the 21 CFR Parts 210 and 211 and 600-610 regulations to ensure that we create and implement appropriate changes, including new quality procedures. Through our internal auditing process, we periodically assess our compliance to the regulations. As Axogen completes the phase 3 clinical trial and eventual BLA submission, we will retain an external audit firm with experience in auditing to 21 CFR Parts 210 and 211 and 600-610 regulations to verify quality system compliance with the regulations.
- Axogen conducts a phase 3 clinical trial to demonstrate safety, purity and potency of Avance Nerve Graft under a Special Protocol Assessment (“SPA”).
    - Axogen and the FDA agreed to the SPA in August 2011 and in accordance with FDA regulations in 21 CFR §Part 312, Axogen submitted an IND to the FDA in April 2013. The IND was approved and became effective in March 2015 and the phase 3 clinical trial was initiated in the second quarter of 2015. The study completed initial enrollment in January 2019. As required by the SPA and agreed to by FDA and Axogen, an independent statistical analysis was conducted to determine if greater study enrollment was appropriate to maintain the planned statistical power of the trial. As part of that review, the targeted enrollment was increased to 220 subjects, and the number of participating centers was increased to up to 25. The study completed initial subject enrollment in July 2020 and the last patient last visit followup was in August 2021. No outcome data is available at this time.
- Axogen continues to comply with the regulations and standards under 21 CFR Part 1271.
    - Axogen was audited by the FDA at its processing facility in March 2013, March 2015 and October 2016 and at its Distribution Facility in October 2015. The quality system was found to be in compliance with 21 CFR Part 1271 and no FDA Form 483 observations were issued.
    - In February 2018. Axogen was audited by the FDA with respect to its Medical Device Quality System under 21 CFR Part 820 and its Human Tissue Quality System under 21 CFR Part 1271. Such audit resulted in two Form 483 observations on general procedures on our Medical Device Quality System and no Form 483 observations on our Human Tissue Quality System. Axogen has taken corrective action to correct these observations and the FDA has accepted the corrective action plan.
    - In November 2018, Axogen was audited again by the FDA with respect to its Human Tissue Quality System under 21 CFR Part 1271. Such audit resulted in one Form 483 observation on tissue tracking. Axogen has taken corrective action to correct this observation and the FDA has accepted the corrective action plan.

Axogen is working with the FDA to ensure compliance with applicable regulations regarding the transition of Axogen's quality system to 21 CFR Parts 210 and 211 and 600-610 compliance and through audits for compliance to 21 CFR Part 1271. Axogen also maintains regular communication with the FDA regarding the IND. The final determination of regulatory compliance will be made by the FDA during the pre-license inspection as part of the BLA review. If the FDA does not find Axogen to be in compliance, or if Axogen is unable to meet the required standards for pre-clinical studies, clinical studies and CMC, the approval of the BLA could be delayed or denied.

Axogen has marketed Avance since 2007. In 2010, the FDA provided Axogen with an enforcement discretion letter authorizing the marketing of Avance so long as Axogen complied with certain terms that focused the Company on taking the necessary steps to support a BLA submission for the product. The FDA will end the period of enforcement discretion upon a final determination of Axogen’s future BLA submission or if prior to the BLA submission, the FDA finds that Axogen does not meet the conditions for the transition plan or is not exercising due diligence in executing the transition (e.g., study completion, or BLA submission is neither timely nor adequate). If final action on the BLA is negative or Axogen is found to not meet the conditions for the transition plan or its execution, Axogen will not be able to continue to distribute Avance Nerve Graft. Axogen continues to work diligently to execute the transition plan, including maintaining regular communication with the FDA, and, in this context, continues to distribute Avance Nerve Graft.

The BLA application of Avance Nerve Graft, if approved, will require a potentially substantial user fee payment to the FDA, although certain exemptions, waivers and discounts of the user fees may apply, including certain waivers or discounts for small businesses.

The FDA Reauthorization Act ("FDARA"), which was signed into law on August 18, 2017, amended the FD&C Act. FDARA includes the Prescription Drug User Fee Amendments of 2012, which authorizes the FDA to continue to collect the

following user fees from applicants who submit certain new drug and biological product applications and supplements. The fees are updated each federal fiscal year:

- *Application Fee:* Each new BLA has a fee required at the time of submission. For Axogen fiscal year 2022 (through September 2022 – the FDA resets the fee starting in October of each year), this fee for a BLA requiring clinical data was approximately $3.1 million. Since the fee is adjusted each year, we cannot provide an accurate estimate of what our fee will be upon submission of our BLA. For small companies (fewer than 500 employees and no other approved biologic product on the market) submitting its first application, a waiver of the application fee is available.

- *Program Fee:* A program fee is assessed for each strength or potency in which the approved (non-revoked, non-suspended) product is manufactured in final dosage form. The program fee is based on an estimate of the number of products that would be subject to, and for which the companies would pay, program fees. The program fee is determined by dividing the adjusted total fee revenue from program fees by the number of estimated products (based on previous year's program fees) subject to the program fee (excluding program fee waivers and reductions granted by the FDA). For Axogen fiscal year 2022 (through September 2022 – the FDA resets the fee starting in October of each year), the program fee has been established at $0.364 million. Axogen may have to pay a program fee after BLA approval.

The current version of the Prescription Drug User Fee Act ("PDUFA") expires on October 1, 2022. Congress must reauthorize the program by September 30, 2022. New user fee amounts will be determined during the reauthorization process. In addition, the PDUFA legislation may contain other provisions that modify sections of FD&C Act. The future version of PDUFA is unknown at this time and we cannot provide an accurate description on how the future version of PDUFA will have on our BLA submission.

In September 2018, the FDA granted a Regenerative Medicine Advanced Therapy ("RMAT") designation for Avance Nerve Graft. A regenerative medicine therapy is eligible for the designation if it is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the product has the potential to address unmet medical needs for such a disease or condition. The RMAT designation provides access to a streamlined approval process for regenerative medicine technologies and ensures continued informal meetings with the FDA in support of the BLA for Avance Nerve Graft.

The Company believes that any future, competitive peripheral nerve allograft would be required to follow the standard pathway for biologic licensing, which typically entails multiple clinical trials and takes many years. The FDA provided updated guidance, "Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use" in November 2017 (revised in July 2020), which made clear that any processing that alters the biological characteristics of peripheral nerve tissue would be considered more than minimal manipulation, and therefore require a BLA prior to marketing.

The Company has maintained a collaborative dialogue with the FDA and will continue to work closely with the FDA as it progresses towards its BLA submission. Upon BLA approval, we believe Avance Nerve Graft will have 12 years of data exclusivity with regard to potential biosimilars with Avance Nerve Graft being designated as the Reference Product.

Clinical Trials

Clinical trials are required to support a BLA or PMA and are sometimes required for 510(k) clearance. Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators. Clinical trials are conducted under strict requirements to ensure the protection of human subjects participating in the trial and under protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring and safety, and the effectiveness criteria to be evaluated. Clinical trials for biological products require the submission and FDA acceptance of an IND and clinical trials for medical devices require the submission and FDA approval of an Investigational Device Exemption ("IDE") application unless the device regulations provide for an exemption from the IDE requirement. Clinical trials for significant risk devices may not begin until the IDE is approved by the FDA and the IRB overseeing the particular clinical trial. If the product is considered a non-significant risk device under FDA regulations, the trial must only be approved by an IRB prior to its initiation. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND or IDE, for significant risk devices. In addition, for these studies, an IRB at each site at which the study is conducted must approve the protocol, subject consent form and any amendments for each site at which the study is conducted. All research subjects must be informed, among other things, about the risks and benefits of the investigational product and provide their informed consent in writing.

Clinical trials under an IND typically are conducted in three sequential phases, but the phases may overlap or be combined. In Axogen's case, Axogen believes that the phase 3 clinical trial study for Avance Nerve Graft represents the only prospective clinical data that will be required to evaluate safety and effectiveness. Phase 3 clinical trials usually further evaluate clinical efficacy and test further for safety in an expanded patient population. Phase 3 clinical trials usually involve comparison with placebo, standard treatments, or other comparators. Usually multiple well-controlled large phase 3 or pivotal clinical trials demonstrating safety and efficacy are required to support a BLA. These trials are intended to establish the overall risk-benefit profile of the product and provide an adequate basis for physician labeling. Clinical testing may not be completed successfully within any specified period, if at all. Furthermore, the FDA or Axogen may suspend or terminate a clinical trial at any time on various grounds, including a finding that the subjects are exposed to an unacceptable health risk, have experienced a serious and unexpected adverse event, or that continued use in an investigational setting may be unethical. Similarly, an IRB can suspend or terminate approval of research, for example, if the research is not being conducted in accordance with the IRB's requirements or if the research has been associated with unexpected serious harm to patients. Additionally clinical data obtained from the observational study, RANGER, will be provided as supportive safety data.

Axogen Clinical Trials

Axogen has an active clinical research program to gather data on its product portfolio. Axogen has completed two clinical studies and is performing six ongoing clinical studies and has plans to initiate further clinical studies. The ongoing studies are:

- "A Multicenter Retrospective Study of Avance Nerve Graft Utilization, Evaluations, and Outcomes in Peripheral Nerve Injury Repair ("RANGER")",
- "A Matched Autograft and Tube Conduit Case Control Cohort Arm of RANGER ("MATCH")",
- "A Multicenter, Prospective, Randomized, Patient and Evaluator Blinded Comparative Study of Nerve Cuffs and Avance Nerve Graft Evaluating Recovery Outcomes for the Repair of Nerve Discontinuities ("RECON")",
- Breast Neurotization Outcomes for Women: A Registry Study of Recovery Outcomes, Quality of Life and Patient Satisfaction in Post-Mastectomy Autologous Breast Reconstruction ("Sensation-NOW")",
- A Multicenter, Prospective and Subject Blinded Comparative Study of Axoguard Nerve Cap and Neurectomy for the Treatment of Symptomatic Neuroma and Prevention of Recurrent End-Neuroma Pain ("REPOSE"), and
- "An Ambispective, Multicenter, Observational Registry Study of Patients Considering Surgical Treatment for Chronic Neuropathic Pain ("ReThink Pain")."

With the voluntary suspension of marketing for Avive Soft Tissue Membrane, the following study has stopped recruiting: "A Registry of Avive Soft Tissue Membrane Utilization in Selected Applications of Acute Trauma in the Upper Extremity ("ASSIST").

Completed studies are "A Multicenter, Prospective, Randomized, Comparative Study of Hollow Nerve Conduit and Avance Nerve Graft Evaluation Recovery Outcomes of the Nerve Repair in the Hand ("CHANGE")" published by Means et al and a pilot study to evaluate the use of Avance Nerve Graft in the reconstruction of nerves following prostatectomy.

In addition to these clinical research programs, Axogen is developing additional clinical trials in peripheral nerve repair, including mixed and motor nerve repair, breast neurotization and pain.

Clinical trials are subject to extensive recordkeeping and reporting requirements. Axogen's clinical trials must be conducted under the oversight of an IRB for the relevant clinical trial sites and must comply with FDA regulations, including but not limited to, those relating to Good Clinical Practices. Axogen is also required to obtain the patients' written, informed consent in a form and substance that complies with both FDA requirements and state and federal privacy and human subject protection regulations. Axogen, the FDA or the IRB may suspend a clinical trial at any time for various reasons, including a belief that the risks to study subjects outweigh the anticipated benefits. Even if a trial is completed, the results of clinical testing may not adequately demonstrate the safety and efficacy of the biological product or device, or may otherwise not be sufficient to obtain FDA approval to market the product in the U.S. Similarly, in the E.U., the clinical study for a medicine product must be authorized by the Competent Authority in each Member State where the clinical trial is to be conducted and must receive a favorable opinion from an ethics committee. See "Risk Factors - Clinical trials can be long, expensive and results are ultimately uncertain, which could jeopardize our ability to obtain regulatory approval and continue to market our Avance Nerve Graft product".

RANGER

The RANGER study is an observational study currently in enrollment and is a utilization registry of Avance Nerve Graft. As of December 31, 2021, eleven publications and more than 70 scientific conference presentations have been generated to date from the study. RANGER is designed to allow up to 2,500 subjects. An additional 500 subjects are allowed to be enrolled in Addendum 1, MATCH, and 2,000 enrolled in Addendum 2, Sensation-NOW. Sensation-NOW is a clinical study cohort designed to assess breast sensation following reconstruction with or without neurotization. Axogen resumed enrollment in 2021 at select centers after pausing enrollment due to COVID-19 in 2020. The follow-up for the RANGER study is standard of care with a target of up to 36 months post peripheral nerve repair. At the time of BLA submission for Avance Nerve Graft, Axogen will provide to the FDA Real World Evidence based primarily on Real World Data from the RANGER study data for all qualifying peripheral nerve repairs.

The RANGER study database is also utilized to monitor different nerve repair techniques. As part of this, Axogen utilizes the database to support additional regulatory submissions for the Axoguard products and Avance Nerve Graft.

Axogen has worked with leading institutions, researchers, and surgeons to support innovation in the field of surgical peripheral nerve repair. Axogen believes that RANGER is currently the largest multi-center observational clinical study conducted in peripheral nerve gap repair. Axogen's RECON study will also continue our clinical work, providing a new multi-center, prospective, randomized, clinical study on Avance Nerve Graft. Various reviewers of the RANGER study have found Avance Nerve Graft nerve repairs resulted in meaningful motor and sensory recovery and reduced pain following neuroma excision and reconstruction with no safety concerns identified.

RECON

The RECON study is a prospective, randomized, controlled, patient and evaluator blinded, comparative study of Avance Nerve Graft and Collagen Nerve Cuffs (manufactured conduits) in the repair of peripheral nerve transections in digital nerves with gaps of 5 to 25mm. The study is designed to assess the outcomes of peripheral nerve repair in approximately 170 subjects in up to 20 centers. Subjects were intraoperatively randomized in a 1:1 ratio after stratification by length of the nerve injury by gap length into short gap (5-14mm) and long gap (15-25mm) categories. The primary objective of the study is to evaluate the safety and efficacy of Avance Nerve Graft for non-inferiority and if met, superiority, of static two-point discrimination, a measure of sensory function, at twelve months as compared to nerve cuffs. Given the pooled standard deviation assumptions and a non-inferiority margin of 2mm, approximately 88 patients per treatment group are required to assess non-inferiority with at least 83% power. In addition to non-inferiority, a minimum treatment effect is required to be demonstrated. Based on an agreement with the FDA in the original protocol and an independent statistical analysis of the pooled standard deviation, the number of subjects was increased to 220 in up to 25 centers. Subjects were followed over the course of 12 months (based on the agreed-upon protocol, subjects have up to an additional three months to complete trial requirements) to assess safety and efficacy outcomes with assessments performed at various defined intervals up to 12 months. The study completed subject enrollment in July 2020. Subject follow-up was completed in August 2021. The study remains on schedule with a top line study data read-out expected in the second quarter of 2022, followed by filing of the BLA submission in 2023.

REPOSE

Axogen is conducting a multicenter, prospective, randomized, and subject blinded study of Axoguard Nerve Cap as compared to neurectomy for the treatment of systematic neuroma ("REPOSE"). REPOSE is a two-phase study comparing standard neurectomy to Axoguard Nerve Cap, which leverages Axogen's chambered technology to aid in the management of symptomatic neuromas. The first phase, a non-randomized pilot has completed enrollment and one-year follow-up. The second phase, a prospective, randomized controlled study, is actively enrolling. Overall enrollment is designed to target 101 subjects with 15 in the first pilot phase followed by up to 86 in the randomized, comparative phase. The study will assess pain scores, quality of life, neuroma recurrence, and health outcomes over a 12-month follow-up period.

ReThink Pain

ReThink Pain is a prospective and retrospective, multicenter, observational clinical study of patients considering surgical treatment for chronic neuropathic pain. Enrollment resumed in 2021 after pausing in 2020 due to COVID-19. ReThink Pain evaluates a patient's healthcare journey and pain history through detailed medical history and record review. For patients who undergo surgical treatment for pain, standardized outcome measures such as post-operative pain, pain medication usage, quality of life outcomes, and functional outcome of associated nerves as compared to pre-operative levels will be assessed.

Continuing Regulation

There are numerous regulatory requirements that apply after a product is cleared or approved. For medical devices, these include, but are not limited to the FDA's regulations for device labeling (21 CFR Part 801), medical device reporting (21 CFR Part 803), reporting of corrections and removals (21 CFR Part 806), establishment of registration and device listing requirements (21 CFR Part 807); and compliance with the QSR per 21 CFR Part 820. Distribution of medical devices is also subject to license/registration requirements in some states. For tissue and biologic products, the regulatory requirements include: the FDA's registration and listing requirements, donor eligibility requirements and compliance with GTP in 21 CFR Part 1271 for human tissue products, compliance with the FDA's cGMP in 21 CFR Parts 210, 211, and 600 for licensed biological products, and post-market BLA requirements (21 CFR Part 601). Among other things, these regulations require manufacturers, including third party manufacturers to:

- Follow stringent design, testing, control, documentation, and other quality assurance procedures during all aspects of the manufacturing process;
- Comply with labeling regulations and FDA prohibitions against the false or misleading promotion or the promotion of products for uncleared, unapproved or off-label uses, or indications;
- Comply with requirements to obtain clearance or approval for certain changes affecting the product, including changes to the product's manufacturing, labeling, or intended use;
- Report to the FDA certain adverse events, adverse reactions, and deviations;
- Comply with post-approval restrictions or conditions, including post-approval study commitments and post-market safety and annual reporting requirements;
- Follow post-market surveillance regulations that may apply when necessary to protect the public health or to provide additional safety and effectiveness data for the device; and
- Follow requirements to issue notices of correction or removal, or conduct market withdrawals, or recalls where quality or other issues arise.

Axogen has not received any reports of adverse events where the event was determined to be product related for Avance Nerve Graft or Avive Soft Tissue Membrane products. Although Axogen has voluntarily suspended marketing of Avive, the suspension was not due to a recall or any safety concerns. Nine adverse events have been reported by Cook Biotech for the Axoguard products (one each in 2013, 2014, 2015, 2016, and 2020; and two each in 2017 and 2019). Axogen reported three biological deviations (two in 2018 and one in 2019) for quality system issues related to human tissue distribution (no patient safety issues were involved). In December 2020, a user facility presented a Medwatch report for Avance Nerve Graft for a sizing issue and potential delay in procedure. Axogen follow up indicated that there was no delay in procedure and Axogen is filing subsequent information to the FDA on this event. Axogen has not had to submit any Medical Device Reports ("MDRs") or tissue adverse reaction reports to the FDA. Although Axogen's Axoguard products have had just nine adverse events reported to date, there may have been other incidents, including patient deaths, that may have occurred during procedures utilizing Axogen's products without Axogen being aware of any such incidents. In addition, there can be no assurance that in the future Axogen's products will not cause or contribute to an adverse event that would require Axogen to submit MDRs, biological deviation reports, or tissue adverse reaction reports to the FDA.

In addition to the FDA, the advertising and promotion of medical products are also regulated by the Federal Trade Commission and in some instances by state regulatory and enforcement authorities. Recently, some promotional activities for FDA-regulated products have been the subject of enforcement action brought under healthcare reimbursement laws and consumer protection statutes. In addition, under the Federal Lanham Act and similar state laws, competitors, and others can initiate litigation relating to advertising claims.

All Axogen locations are properly registered with the FDA as tissue establishments for Avance Nerve Graft and Avive Soft Tissue Membrane. The FDA has broad post-market and regulatory enforcement powers. Axogen is subject to unannounced inspections by the FDA to determine compliance with the GTP, GMP, and other regulations, and these inspections may also include suppliers' manufacturing facilities.

Failure by Axogen or by Axogen's suppliers to comply with applicable regulatory requirements can result in enforcement action by the FDA or other federal or state authorities, which may include any of the following sanctions, among others:

- Warning letters, fines, injunctions, consent decrees and civil penalties;
- Customer notifications, repair, replacement, refunds, recall or seizure of our products;
- Operating restrictions, partial suspension, or total shutdown of production;
- Suspension or termination of our clinical trials;
- Refusing our PMA or BLA for new products, new intended uses, or modifications to existing products;
- Withdrawing or spending pre-market approvals that have already been granted; and

- Criminal prosecution.

Education Grants, U.S. Anti-kickback, False Claims and Other Healthcare Fraud and Abuse Laws

Educational Grants

A medical product manufacturer may provide financial or in-kind support, including support by way of grants, to third parties for the purpose of conducting medical educational activities. If these supported activities are considered by the FDA to be independent of the manufacturer, then the activities fall outside the FDA restrictions on promotion to which the manufacturer is subject.

Axogen seeks to ensure that the educational activities it supports through its grants program are in accordance with the appropriate criteria for independent educational activities. However, Axogen cannot provide assurance that the FDA or other government authorities would view the programs supported as being independent.

Fraud, Abuse and False Claims

Axogen is directly and indirectly subject to various federal and state laws governing relationships with healthcare providers and pertaining to healthcare fraud and abuse, including anti-kickback laws. In particular, the U.S. Anti-Kickback Statute prohibits persons from knowingly and willfully soliciting, offering, receiving, or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual, or the furnishing, arranging for or recommending a good or service for which payment may be made in whole or part under federal healthcare programs, such as the Medicare and Medicaid programs. Penalties for violations could include criminal penalties and civil sanctions such as fines, imprisonment and possible exclusion from Medicare, Medicaid, and other federal healthcare programs. In implementing the statute, the Office of Inspector General of the U.S. Department of Health and Human Services (“OIG”) has issued a series of regulations, known as “safe harbors.” These safe harbors set forth provisions that, if all their applicable requirements are met, will assure healthcare providers and other parties that they will not be prosecuted under the Anti-Kickback Statute for activities that fit within a safe harbor. The failure of a transaction or arrangement to fit precisely within one or more safe harbors does not necessarily mean that it is illegal or that prosecution will be pursued. However, conduct and business arrangements that do not fully satisfy each applicable element of a safe harbor may result in increased scrutiny by government enforcement authorities, such as the OIG, and may be “at risk” activities unless a favorable advisory opinion is obtained from the OIG.

The Federal False Claims Act (“FCA”) imposes civil liability on any person or entity that submits, or causes the submission of, a false or fraudulent claim to the U.S. government. Damages under the FCA can be significant and consist of the imposition of fines and penalties. The FCA also allows a private individual or entity with knowledge of past or present fraud against the federal government to sue on behalf of the government to recover the civil penalties and treble damages. The U.S. Department of Justice ("DOJ") has previously alleged that the marketing and promotional practices of pharmaceutical and medical device manufacturers including the off-label promotion of products or the payment of prohibited kickbacks to doctors violated the FCA resulting in the submission of improper claims to federal and state healthcare entitlement programs such as Medicaid.

AdvaMed is one of the primary voluntary U.S. trade associations for medical device manufacturers. This association has established guidelines and protocols for medical device manufacturers in their relationships with healthcare professionals on matters, including research and development, product training and education, grants and charitable contributions, support of third-party educational conferences, and consulting arrangements. Adoption of the AdvaMed Code by a medical device manufacturer is voluntary, and while the OIG and other federal and state healthcare regulatory agencies encourage its adoption, they do not view adoption of the AdvaMed Code as proof of compliance with applicable laws. Key to the underlying principles of the AdvaMed Code is the need to focus the relationships between manufacturers and healthcare professionals on matters of training, education and scientific research, and limit payments between manufacturers and healthcare professionals to fair market value for legitimate services provided and payment of modest meal, travel, and other expenses for a healthcare professional under limited circumstances. Axogen has incorporated these principles into its relationships with healthcare professionals under its consulting agreements, payment of travel and lodging expenses, research and educational grant procedures and sponsorship of third-party conferences. In addition, Axogen has conducted and will continue to conduct training sessions on these principles. Finally, the Sunshine Act, as defined below, imposes additional reporting and disclosure requirements on Axogen for any “transfer of value” made or distributed to physicians and teaching hospitals, as well as reporting of certain physician ownership interests. Axogen cannot provide any assurance that regulatory or enforcement authorities will view its relationships with physicians or policies as being in compliance with applicable regulations and laws.

Regulation Outside of the U.S.

Distribution and sales of medical products outside of the U.S. are subject to foreign governmental regulations that vary substantially from country to country.

There are restrictions under U.S. law on the export of medical devices and biological products that cannot be legally distributed in the U.S. The FDA has set forth certain requirements for the export of devices outside of the U.S. depending on the class of device and its FDA approval. Axogen currently believes it complies with applicable regulations when exporting its products and Axogen intends to continue such compliance in the event there are any regulatory changes regarding its products in the U.S.

The primary regulatory body in Europe is the E.U. which has adopted numerous directives and promulgated voluntary standards regulating the design, manufacture and labeling of, and clinical trials and adverse event reporting for, medical devices. Devices that comply with the requirements of a relevant directive will be entitled to bear CE marking, indicating that the device conforms to the essential requirements of the applicable directives and can be commercially distributed throughout the member states of the E.U. and other countries that comply with these directives. The method for assessing conformity varies depending on the type and class of the device, but normally involves an assessment by the manufacturer and a third-party assessment by a notified body, an independent and neutral institution appointed by a country to conduct the conformity assessment. This third-party assessment may consist of an audit of the manufacturer's quality system and specific testing of the manufacturer's device. Such an assessment is required for a manufacturer to commercially distribute the product throughout these countries. In the second quarter of 2014, Axogen's Quality System became registered to ISO 13485 for Receipt, Handling, Storage and Distribution of Axoguard Nerve Connector and Axoguard Nerve Protector and Axogen will maintain the registration through 2023.

Cook Biotech is responsible for all regulatory filings for the Axoguard Nerve Connector and Axoguard Nerve Protector products, including international registrations. Axogen provides the countries for Cook Biotech to register with, and Cook Biotech prepares and submits the product filing documentation to the Ministry of Health ("MOH") for the country. Each country or region has its own regulations and the documentation required for submission varies. It typically takes less than nine months from the initiation of the project to obtain clearance in a given country or region. To date, the Axoguard Nerve Connector and Axoguard Nerve Protector product lines were registered in May 2013 in Canada for distribution and in April 2013 the product lines were awarded the CE Mark allowing distribution into the E.U. and other countries that accept the CE Mark. Cook Biotech received the renewal of the CE Mark for Axoguard Nerve Connector and Axoguard Nerve Protector in May 2021.

In addition, the new European Medical Device Regulation ("E.U. MDR") passed in the European Parliament on April 5, 2017 and went into effect on May 25, 2017. The E.U. MDR is an extensive reform of the rules governing the medical device industry in Europe. Under this regulation, manufacturers had through May 2021 to comply with a broad set of new rules for almost every kind of medical device. The E.U. MDR requires changes in the clinical evidence required for medical devices, post-market clinical follow-up evidence, annual reporting of safety information for Class III products, and bi-annual reporting for Class II products, Unique Device Identification ("UDI") for all products, submission of core data elements to a European UDI database prior to placement of a device on the market, reclassification of medical devices, and multiple other labeling changes.

Overall, medical device companies can expect longer lead times to obtain product registrations (i.e., CE Mark Certification) in the E.U. and a substantially costlier pathway to compliance in the E.U. We are not yet able to determine the costs of complying with these regulations, how the E.U. will interpret and enforce them, what the timelines for approvals of products will be and the overall effect of the E.U. MDR on the marketplace. Given the significant additional pre-market and post-market requirements imposed by the E.U. MDR, the overall impact of these new rules could have a material, adverse effect on the Company's revenue and expenses.

The UK left the E.U. in January 2020. Axogen registers its human tissue products in each individual E.U. country and each distributor in the UK has import authority for Axogen's human tissue product. It is expected that licensed UK establishments that import or export tissues or cells will need written agreements with the relevant E.U. licensed establishments to continue importing and exporting with the E.U. As Axogen ships directly to the UK from the U.S., we expect no delays in shipment of human tissue products into the UK in 2021. Further, the RANGER clinical trial being performed at select hospitals in the UK was not affected by Brexit (defined below in "Risk Factors - Regulation Outside of the U.S.") as long as the products continue to come directly from the U.S. Beginning in January 2021, new changes became effective as the transition period for the UK's exit from the E.U. ended. Specifically, all medical devices placed into the UK market had to be registered, subject to applicable grace periods, with the Medicines and Healthcare products Regulatory Agency ("MHRA"), will need to appoint a UK Responsible Person, and comply with additional product marking and conformity assessment requirements. Medical devices

must be registered with the MHRA if they are being placed in the UK market after May 1, 2021. Cook Biotech is responsible for appointing the UK Responsible Person and registering Axoguard Nerve Connector and Axoguard Nerve Protector in the UK.

Tissue products are not currently regulated under the CE Mark

Axogen is responsible for all regulatory filings for Avance Nerve Graft and Avive Soft Tissue Membrane (which we have voluntarily suspended from the market). To obtain international approvals, Axogen will prepare the product filing documentation and submit this documentation to the MOH for a country.

Although some standards of harmonization exist, each country in which Axogen conducts business has its own specific regulatory requirements, which are dynamic in nature and continually changing. Axogen procures and processes its tissue for the Avance Nerve Graft and Avive Soft Tissue Membrane in the U.S. and markets the Avance Nerve Graft in Canada, the UK, and certain other countries under compliance with the individual country regulations. Axogen conducts a regulatory review at the time of submission of the product dossier. This involves reviewing the appropriate MOH regulations, discussion with in-country distributors and use of consultants. It typically takes less than nine months from the initiation of the product to develop a product dossier (specific for that country), submission of the documentation and MOH review of the product filing. While Axogen believes that it is in compliance with all existing pertinent international and domestic laws and regulations, there can be no assurance that changes in governmental administrations and regulations will not negatively impact Axogen's operations. Avive Soft Tissue Membrane has received regulatory registration allowing for distribution in Canada, UK, and Austria.

The FDA and international regulatory bodies conduct periodic compliance inspections of Axogen's U.S. processing facilities. All of Axogen's locations are properly registered with CBER as tissue establishments. Axogen is also accredited by the AATB and is licensed in the states of Florida, New York, California, Maryland, Delaware, Oregon, and Illinois. Axogen believes that worldwide regulation of tissue products is likely to intensify as the international regulatory community focuses on the growing demand for these implant products and the attendant safety and efficacy issues of recipients. Changes in governing laws and regulations could have a material adverse effect on Axogen's financial condition and results of operations. Axogen management further believes that it can help to mitigate this exposure by continuing to work closely with government and industry regulators.

Environmental

Axogen's products, as well as the chemicals used in processing these products, are handled and disposed of in accordance with country-specific, federal, state, and local environmental regulations. Since 2007, Axogen has used outside third parties to perform all biohazard waste disposal.

Axogen contracts with independent, third parties to perform sterilization of its allografts. Because of the engagement of a third party to perform irradiation services, the requirements for compliance with radiation hazardous waste do not apply, and therefore Axogen does not anticipate that this engagement will have any material adverse effect upon its capital expenditures, results of operations or financial condition. However, Axogen is responsible for assuring that the service is performed in accordance with applicable regulations. Although Axogen believes it is in compliance with all applicable environmental regulations, the failure to fully comply with any such regulations could result in the imposition of penalties, fines or sanctions that could have a material adverse effect on Axogen's business.

Human Capital

As of December 31, 2021, we had approximately 451 total employees, including approximately 23 part-time employees and 428 full-time employees.Of these employees, 228 work in sales and marketing, 79 work in corporate, 65 work in research and development and 56 work in operations. As of the date of this Annual Report on Form 10-K we have not had a work stoppage and no employees are represented by a labor union. We believe our relationship with our employees is satisfactory. We encourage our employees to be effective stewards of the gift of human tissue. We believe in creating and maintaining a culture that encourages and rewards honesty, openness, and passionate debate among its employees, respect is the foundation for communication and action, and patient safety is our first priority. In response to COVID-19, our top priority has been the health and safety of those we serve, including healthcare professionals and their patients, as well as our employees, communities, and suppliers.

The Compensation Committee of our board of directors (the "Board of Directors") has oversight of our culture and human capital management, including diversity, equity, and inclusion with respect to our employees.

Available Information

Our website address is http://www.axogeninc.com. We have included our website address as an inactive textual reference only. We make available, free of charge through our website, our annual reports on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file, or furnish such material to the SEC. We also similarly make available, free of charge on our website, the reports filed with the SEC by our executive officers, directors and 10% shareholders pursuant to Section 16 under the Exchange Act as soon as reasonably practicable after copies of those filings are provided to us by those persons. Reference to our website, or any other website, does not constitute incorporation by reference of the information contained on the site and should not be considered part of this Annual Report on Form 10-K.

Executive Officers of the Registrant

The following table lists the names and positions of the individuals who are, as of February 23, 2022, executive officers of Axogen:

Name	Title
Karen Zaderej	Chairman, Chief Executive Officer and President
Peter J. Mariani	Executive Vice President and Chief Financial Officer
Bradley L. Ottinger	General Counsel and Chief Compliance Officer
Eric A. Sandberg	Chief Commercial Officer
Maria Martinez	Chief Human Resource Officer
Isabelle Billet	Chief Strategy and Business Development Officer
Angelo G. Scopelianos, Ph.D.	Chief Research and Development Officer
Erick DeVinney	Vice President, Peripheral Nerve Science and Clinical Innovations
Mike Donovan	Vice President, Operations
Mark Friedman, Ph.D.	Vice President, Regulatory Affairs and Policy

Biographical information for each of our executive officers is included below.

Karen Zaderej, Chairman, Chief Executive Officer and President (Age 60)

Ms. Zaderej joined Axogen Corporation in May 2006. Ms. Zaderej has served as Axogen's President, Chief Executive Officer, and a member of our Board of Directors since September 2011 and became Chairman of the Board of Directors in May 2018. She has served as Chief Executive Officer and as a member of the Board of Directors of Axogen Corporation since May 2010 and as Chief Operating Officer from October 2007 to May 2010 and as Vice President of Marketing and Sales from May 2006 to October 2007. From October 2004 to May 2006, Ms. Zaderej worked for Zaderej Medical Consulting, a consulting firm she founded, which assisted medical device companies with building and executing successful commercialization plans. From 1987 to 2004, Ms. Zaderej worked at Ethicon, Inc., a Johnson & Johnson ("J&J") company, where she held senior positions in marketing, business development, research & development, and manufacturing. Ms. Zaderej is a member of the University of Tampa Board of Trustees and the MedExec Women Board of Advisors. She has a MBA degree from the Kellogg Graduate School of Business and a B.S. degree in Chemical Engineering from Purdue University.

Peter J. Mariani, Chief Financial Officer (Age 58)

Mr. Mariani has been Axogen’s Chief Financial Officer since March 2016. He brings more than 25 years of experience as a financial executive in private and public companies. He previously served as Chief Financial Officer of Lensar, Inc, a privately held laser refractive cataract surgery company, from July 2014 through January 2016, following the sale of Lensar in December 2015. From June 2011 to June 2014, he served as Chief Financial Officer of Hansen Medical, a publicly traded medical device company developing robotic solutions for intravascular procedures. From 2007 through 2010, he served as Chief Financial Officer for two privately held companies (Harlan Laboratories: 2007 – 2009 and BMW Constructors: 2009 – 2010). From 1994 through 2006, he served in various senior financial roles with Guidant Corporation, a publicly traded leader in the development and sale of medical devices for the treatment of cardiovascular disease. Mr. Mariani began his career with Guidant as Director of Corporate Financial Reporting where he supported the initial public offering of Guidant and ultimately served as Vice President, Controller and Chief Accounting Officer. His experience at Guidant included two years as Director of Financial Reporting, Guidant Vascular Intervention in Santa Clara, California, and four years in Tokyo, Japan, mostly as Vice President Finance and Administration. While in Japan, he helped to facilitate the conversion and scale of the Japan business from a

distributor network to a direct sales and marketing organization. Following the 2006 sale of Guidant to Boston Scientific Corporation, he co-led the initial integration of the two companies. From 1987 to 1994, Mr. Mariani worked with Ernst and Young, LLP, where he served a diverse client base as a Certified Public Accountant. Mr. Mariani received a B.S. degree in Accounting from Indiana University.

Bradley L. Ottinger, JD, General Counsel (Age 52)

Mr. Ottinger joined Axogen as General Counsel and Chief Compliance Officer on June 1, 2020. Prior to joining Axogen, Mr. Ottinger most recently served as the Vice President, General Counsel, Chief Administrative Officer, and Secretary of MicroPort Orthopedics Inc., a wholly owned subsidiary of Shanghai-based MicroPort Scientific Corporation, a manufacturer of total hip and knee implants, from October 2017 to January 2020. From March 2015 until October 2017, Mr. Ottinger served as MicroPort's Vice President, Legal, Compliance, and Human Resources, having joined MicroPort as Associate General Counsel in January 2014. From March 2015 until his departure, Mr. Ottinger also served as a member of MicroPort Scientific's Intercontinental Executive and Intercontinental Orthopedics Committees. Mr. Ottinger joined MicroPort following his tenure with Buckeye Technologies Inc., where from December 2011 to January 2014 he served as Associate General Counsel, providing a breadth of legal services to the enterprise, with a primary focus on corporate transactions. Prior to joining Buckeye Technologies, Mr. Ottinger concentrated his private practice in securities law/litigation and corporate transactions with both an international and domestic focus and used that foundation to develop expertise in corporate compliance and ethics with which he maintains professional certifications. Prior to attending law school, Mr. Ottinger worked with Accenture (formerly known as Andersen Consulting) as a Management Consultant and with First Horizon Bank (formerly known as First Tennessee Bank) in Human Resources delivering management development programs and managing succession planning. Mr. Ottinger holds a J.D. degree from Washington University in St. Louis, a M.Ed. degree from Vanderbilt University, and a B.A. degree in Liberal Arts from the Pennsylvania State University.

Eric A. Sandberg, Chief Commercial Officer (Age 57)

Mr. Sandberg has served as Axogen's Chief Commercial Officer since January 2019. Mr. Sandberg has extensive leadership experience in commercializing medical technologies. He held leadership positions across sales, marketing, corporate accounts, and business development during a twelve plus year career at medical device manufacturers Guidant Corporation and Boston Scientific. While at Guidant, Mr. Sandberg built and led commercial teams that challenged the standard of care with innovative new solutions; including Guidant's first coronary stent system, which achieved market leadership in three months post launch and generated $700 million in sales within fifteen months. He built and led the sales organization for CardioDx, a genomic diagnostic company, spearheading efforts to launch and create market demand for the company's inaugural product. As President and Chief Executive Officer for Tangent Medical Technologies, Mr. Sandberg led all aspects of the company as it commercialized an innovative intravenous catheter system. Most recently, he served as Chief Executive Officer for Visura Technologies, successfully leading the development, patenting, FDA process, and commercialization of a novel transesophageal echocardiography camera assist device system, and as Chief Business Officer of gene therapy company, Rhythm Therapeutics. Mr. Sandberg earned a MBA degree from Harvard Business School and a B.S. degree from Bradley University.

Maria Martinez, Chief Human Resource Officer (Age 54)

Ms. Martinez has served as Axogen's Chief Human Resource Officer since October 2018. She brings more than 25 years of human resource ("HR") leadership experience to the Company. From January 2018 until joining Axogen, Ms. Martinez provided HR consulting and leadership services through her firm, MDM Consulting Services, LLC. From June 2014 to December 2017, Ms. Martinez served as Chief Human Resource Officer at HSNi, a $4 billion direct to consumer retail portfolio with more than 7,000 employees in nine locations. She held the Senior Vice President Talent Management role at HSNi from July 2010 until June 2014 when she was promoted. Ms. Martinez originally joined HSNi as Manager in 1995 and left the company in 2005 as Vice President, Human Resources. From September 2008 to June 2010, Ms. Martinez served as the Vice President, Human Resources for Laser Spine Institute, an organization dedicated to performing minimally invasive spine surgery, where she established the company's human resources function and supported the expansion of the organization's business to multiple sites. She held the role of Human Resources leader for Bausch & Lomb's U.S. Pharmaceutical division from April 2007 to September 2008. From July 2005 to April 2007, she served as Sr. Director Human Resources for Darden Restaurants. Ms. Martinez serves on the Board of Directors of Good360, a national not for profit organization. Ms. Martinez earned a Master of Arts degree in Industrial/Organizational Psychology from Florida Institute of Technology, a B.S. degree in Psychology and a B.A. degree in French from the University of South Florida.

Isabelle Billet, Chief Strategy and Business Development Officer (Age 60)

Ms. Billet has served as Axogen's Chief Strategy and Business Development Officer since October 2018. She brings more than 30 years of global medical device strategy, marketing, and business development experience to the Company. From July 2013 until joining the Company, Ms. Billet worked for IBHC Advisors LLC, a consulting firm she founded. IBHC assisted

medical device companies with developing organic and inorganic growth strategies and supported private equity firms on their investment strategy and due diligence. Ms. Billet worked at Cardinal Health, Inc. from 2010 to 2013, where she served as Senior Vice President of Marketing and Innovation for the Medical segment focusing on their private brand portfolio development. She was Vice President Marketing and New Business Development for C.R. Bard Medical division from 2005 to 2010. She worked for J&J from 1992 to 2005, splitting her tenure between Advanced Sterilization Products and Ethicon, Inc. in positions of increasing responsibilities in marketing and new business development in France, Europe, and the U.S. Ms. Billet spent the first seven years of her career as the head pharmacist and material manager for a private hospital in France. Ms. Billet is a former member of the Clinical Innovations Board of Directors. She earned a MBA degree from EM Lyon Business School, France and Cranfield School of Management, UK and a Doctorate in Pharmacy degree from Montpellier University in France.

Angelo G. Scopelianos, Ph.D., Chief Research and Development Officer (67)

Dr. Scopelianos has served as Axogen's Chief Research and Development Officer since January 2021. From September 2018 to January 2021, he served as Axogen's Vice President of Research and Development. From 2012 until joining Axogen, Dr. Scopelianos was an independent consultant specializing in medical devices. He began consulting after his retirement from a 24-year tenure at J&J. Dr. Scopelianos began at J&J in 1988 as section manager of Research and Development and held the escalating positions of Manager of Research and Development, Director of Research and Development, Vice President of Research and Development and finally from October 2010 to September 2012 Senior Vice President of Research and Development. He joined J&J after research leadership positions at EI Dupont de Nemours in Wilmington, Delaware, and Pennwalt Corporation. Dr. Scopelianos received his doctorate degree in organic chemistry from Pennsylvania State University, following completion of a B.S. degree from the State University of New York—Oneonta. He holds over 35 U.S. patents and numerous international patents, and his awards include the Outstanding Science Alumni Award by Pennsylvania State University and the Scientific Leadership Award in Biomaterials Science awarded by a consortium of New Jersey research universities.

Erick DeVinney, Vice President, Peripheral Nerve Science and Clinical Innovations (Age 46)

Mr. DeVinney has served as Axogen's Vice President, Peripheral Nerve Science and Clinical Innovations since January 2014. From April 2007 until January 2014, Mr. DeVinney was the Director of Clinical and Translational Sciences for Axogen. Mr. DeVinney has over 18 years of experience in the successful planning and management of clinical trials. He has a diverse background, including research at a large academic facility and management of clinical operations for a medical device and pharmaceutical company. Mr. DeVinney has been involved in clinical research at Medical College of Virginia Hospitals, National Clinical Research, PRA International and Angiotech. He has been involved in the successful submission of eight IDE or new drug applications, as well as numerous premarket notification submissions ("510(k)s"). He has a B.S. degree in chemistry from Virginia Commonwealth University.

Mike Donovan, Vice President, Operations (Age 57)

Mr. Donovan has served as Axogen's Vice President, Operations since September 2015. Prior to September 2015, Mr. Donovan was Axogen's Director of Operations from January 2011 until September 2015. From 1988 to 2010, Mr. Donovan held positions at Zimmer Holdings in manufacturing, continuous improvement, quality assurance, and sterilization, including Director of Manufacturing from 2002 to 2010. Mr. Donovan has a B.S. degree in Chemical Engineering and a MBA degree from the University of Akron.

Mark Friedman, Ph.D., Vice President, Regulatory Affairs and Policy (Age 64)

Dr. Friedman has served as Axogen's Vice President, Regulatory Affairs and Policy since March 2021. Previously Dr. Friedman served as Axogen's Vice President of Regulatory Affairs and Quality Assurance from November 2011 to March 2021. He has also served as Axogen's Director, Quality Assurance and Regulatory Affairs from September 2006 to June 2011. Prior to joining Axogen, Dr. Friedman held several regulatory and quality leadership positions at Enable Medical Corporation, a medical device company, including Director of Quality Assurance from 1997 to 1998 and Vice President of Quality and Regulatory from 1998 to 2001 and from 2004 to 2005. Dr. Friedman also worked for AtriCure, Inc., a company that develops, manufactures, and sells surgical ablation systems to treat atrial fibrillation, as Vice President of Quality and Regulatory from 2001 to 2004 and as Vice President of Operations in 2004. AtriCure acquired Enable Medical Corporation in 2005. Dr. Friedman has over 24 years of experience in developing and directing regulatory strategy and quality systems for medical products, including fifteen years with startup medical product firms. Dr. Friedman has a Ph.D. degree in Chemistry specializing in protein biochemistry from the University of Cincinnati.

ITEM 1A. RISK FACTORS

Our business involves a number of risks, some of which are beyond our control. The risk and uncertainties described below are not the only ones we face. Set forth below is a discussion of the risks and uncertainties that management believes to be material to us.

Risks Related to the Company

Our revenue growth depends on our ability to increase distribution and sales to existing customers and develop new customers, domestically and abroad, and there can be no assurance that these efforts will result in significant increases in sales.

Beginning in 2020, and in part as response to the COVID-19 pandemic, we adjusted our commercial strategy to focus on deeper penetration of our existing surgeon customers through the development of long-term users of Avance in our largest market opportunity of extremity trauma. Throughout the pandemic, we kept the sales team and broader commercial organization intact and took the opportunity to provide extensive sales training. Our sales team developed new skills and shared best practices for remote case support in hospitals where access was restricted. We believe this remote support has been appreciated by customers and has expanded the sales team's ability to support customers during COVID-19 and beyond. We believe that near-term growth can be supported first through expanded productivity of our existing sales force with existing customers and accounts and second by adding additional customers. We expect the number of direct sales professionals to increase over time. Additionally, we believe that we have successfully utilized a hybrid commercial approach that includes the use of independent agencies in more remote geographies to provide appropriate local support for customers, without the travel time required of a direct sales representative. We anticipate that we will continue to add to the number of independent sales agencies as it continues to drive higher productivity and efficiency with our direct sales force. We may also need to establish a regional distribution center or centers at some point in the future to account for growth. The incurrence of these expenses may impact our operating results, and there can be no assurance of their effectiveness. If we are unable to increase sales to existing customers and attract new customers, and develop our sales force, there could be a material adverse impact on our business, results of operations, financial condition, and prospects.

Our revenue depends primarily on four products.

Substantially all of our revenue is currently derived from four products, Avance Nerve Graft, Axoguard Nerve Protector, Axoguard Nerve Connector, and Axoguard Nerve Cap for the treatment of peripheral nerve damage. Of these four products, Avance Nerve Graft represents approximately half of the Company's total revenue. Effective June 1, 2021, we voluntarily suspended the market availability of Avive Soft Tissue Membrane. Any disruption in our ability to generate revenue from the processing, distribution, and sale of products will have a material adverse impact on our business, results of operations, financial condition, and prospects.

Avance Nerve Graft and Avive Soft Tissue Membrane (which we have voluntarily suspended from the market) processing consists of several steps and we use a number of recovery and/or acquisition agencies to supply the human tissue needed for these products. While we believe our current contracts and the ability to enter into future contracts will provide us with the tissues required for the products, we cannot be sure that we will be able to obtain the tissue that we need in the future. Disruptions in the tissue supply may adversely impact both tissue products and our overall business.

Axoguard Nerve Connector and Axoguard Nerve Protector are only available through the Cook Biotech Distribution Agreement. The Distribution Agreement was amended February 26, 2018 to extend the termination date to June 30, 2027. However, there are conditions for continuation of the agreement, including payment terms and minimum purchase requirements, that if breached could result in an earlier termination of the agreement. Through mutual agreement, the parties have not established such minimums and to date have not enforced such minimum purchase provision. Additionally, in the event that we and Cook Biotech were to fail to reach an agreement as to minimum purchase quantities, Cook Biotech could terminate the agreement if we fail to generate commercially reasonable sales of Axoguard as measured by sales similar to a competitive product at the same stage in its commercial launch as verified by a mutually acceptable third party. We distribute the Axoguard Nerve Connector and Axoguard Nerve Protector for Cook Biotech, and Cook Biotech is the contract manufacturer for our Axoguard Nerve Cap. Although we believe we could develop or obtain products that would replace the Axoguard products obtained through the Cook Biotech agreements, the loss of the ability to sell the Axoguard products could have a material adverse effect on our business, results of operations, financial condition, and prospects.

The COVID-19 pandemic could continue to have a material adverse effect on our ability to operate, results of operations, financial condition, liquidity, and capital investments.

The World Health Organization declared the COVID-19 outbreak a pandemic in March 2020. COVID-19, or similar extraordinary events in the future, could have a material adverse effect on our ability to operate, results of operations, financial condition, liquidity, and capital investments.

In response to COVID-19, the reduced activities of the U.S. population due to the "shelter-in-place" policies at the beginning of the pandemic reduced the incidence of traumatic nerve injuries, which affected demand for our products. Additional effects impacting the medical industry in general include reallocating employees and resources to prepare for increased COVID-19 patients; deferrals of or limits on elective and non-emergency procedures; restricted hospital access to non-essential personnel, including sales and clinical representatives; and limiting or pausing clinical research activities.

COVID-19 caused and may continue to cause decreased access to customer channels, slowing or stopping of the development of clinical products or clinical data, decreased employee availability, hospital staffing shortages, adverse economic conditions, border closures and other disruptions to our business, as well as the businesses of our business partners and others. Furthermore, COVID-19 may have the effect of heightening many of the other risks described in this Annual Report on Form 10-K. COVID-19 has also imposed significant burden on the FDA and forced the agency to divert resources from product review and its approval process.

Although economic activity is normalizing, the Delta and Omicron variants of COVID-19 continue to spread in the U.S. and across the globe. The ultimate impact of these variants, and other new strains that may develop, cannot be predicted at this time, and could depend on numerous factors, including vaccination rates among the population, the effectiveness of COVID-19 vaccines against variants and the response by governmental bodies and regulators, which could include vaccine mandates.

Furthermore, global supply chain disruptions, labor shortages, which may affect our ability to retain and attract new talent, and inflationary conditions caused by the COVID-19 pandemic could have a material adverse effect on our business, results of operations, financial condition, and prospects. The rapid development and fluidity of the situation surrounding COVID-19 prevent any prediction as to the ultimate impact COVID-19 will have on our business, results of operations, financial condition, and prospects, which will depend largely on future developments directly or indirectly relating to the duration and scope of the COVID-19 outbreak in the U.S. and globally.

Our success will be dependent on continued acceptance of our products by the medical community.

Continued market acceptance of our products will depend on our ability to demonstrate that our products are an attractive alternative to existing or new nerve reconstruction treatment options, including both surgical techniques and products. Our ability to do so will depend on surgeons' evaluations of clinical safety, efficacy, ease of use, reliability, and cost-effectiveness, including insurance reimbursement, of our nerve repair products. For example, although our Avance Nerve Graft follows stringent safety standards, including sterilization by gamma irradiation, we believe that a small portion of the medical community has lingering concerns over the risk of disease transmission through the use of allografts in general. If the medical community and patients do not ultimately accept our products as safe and effective or we are unable to raise awareness of our products and processes, our ability to sell the products may be materially and adversely affected, and our business, results of operations, financial condition, and prospects may be adversely affected.

We have not consistently experienced positive cash flow from our operations, and the ability to achieve consistent, positive cash flow from operations will depend on increasing revenue from distribution of our products, which may not be achievable.

We have historically operated with negative cash flow from our operations. As of December 31, 2021, we had an accumulated deficit of approximately $230.6 million. If revenue does not increase as anticipated, then we will continue to experience negative cash flows and adverse operating conditions. In June 2020, we entered into a seven-year $70 million debt facility with Oberland Financial, the proceeds of which are expected to be used for working capital and general corporate purposes. As our debt obligations mature or if our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures, sell assets, seek additional capital, or restructure or refinance our indebtedness. Our ability to restructure or refinance our debt will depend on the condition of the capital markets and our financial condition at such time. Any refinancing of our debt could be at higher interest rates and may require us to comply with more onerous covenants, which could further restrict our business operations. If we raise funds by selling additional equity, such sale would result in dilution to our shareholders. There is no assurance that if we are required to secure funding, we can do so on terms acceptable to us, or at all.

We are highly dependent on the continued availability of our facilities and could be harmed if the facilities are unavailable for any prolonged period of time.

Any failure in the physical infrastructure of our facilities, including the facility we license from CTS, could lead to significant costs and disruptions that could reduce our revenue and harm both our business reputation and financial results. Any natural or man-made event that impacts our ability to utilize our facilities could have a material impact on our business, results of operations, financial condition, and prospects. This includes termination of the CTS Agreement, which is set to expire on December 31, 2023, subject to earlier termination by either party at any time for cause (unless a right to cure by the non-terminating party applies), or without cause by us upon six months prior notice. We believe we can find and make operational a new licensed facility in less than six months, if required. In addition, we acquired property that is located near the CTS facility, and it is expected that renovations will be completed by the termination date of the CTS Agreement to provide a new processing facility that can be included in our BLA for the Avance Nerve Graft. However, renovations and the regulatory process for approval of facilities whether licensed or owned is time-consuming and unpredictable. It could cause a significant disruption in service to our customers if we were to lose, even temporarily, the availability of our production or distribution facilities. In addition, we may plan to open additional office, lab or distributions space in the future, and our ability to license, renovate, rebuild, or find acceptable service facilities takes a considerable amount of time and expense. Although we have business interruption insurance that would cover certain costs in instances other than service agreement termination, it may not cover all costs nor help to regain our standing in the market.

Delays, interruptions, or the cessation of production by our third-party suppliers of important materials may prevent or delay our ability to manufacture or process the final products.

Most of the raw materials used in the process for Avance Nerve Graft and Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, are available from more than one supplier. However, there are materials within the manufacturing and production process that come from single suppliers or certain supplies may be difficult to procure due to supply chain shortages or changes in global trade regulations. The COVID-19 pandemic and its ongoing effects could cause disruptions in the supply chain and impair our ability to obtain the materials needed for our product line.

We do not have written contracts that guarantee supply with any of our suppliers, and at any time they could stop supplying our orders. FDA review of a new supplier may be required if these materials become unavailable from our current suppliers. Although there may be other suppliers that have equivalent materials that would be available to us, if FDA review is required, it could take several months or years to obtain, if approval is able to be obtained at all. Any delay, interruption, or cessation of production by our third-party suppliers of important materials, or any delay in qualifying new materials, if necessary, would prevent or delay our ability to manufacture products.

In addition, an uncorrected impurity, a supplier's variation in a raw material or testing, either unknown to us or incompatible with our manufacturing process, or any other problem with our materials, testing or components, would prevent or delay our ability to process tissue. These delays may limit our ability to meet demand for our products and delay our clinical trials, which would have a material adverse impact on our business, results of operations, financial condition, and prospects.

Technological change and competition for newly developed products could reduce demand for our products.

The medical technology industry is intensely competitive. We compete with both U.S. and international entities that engage in the development and production of medical technologies and processes, including:

- biotechnology, orthopedic, pharmaceutical, biomaterial, chemical, and other companies;
- academic and scientific institutions; and
- public and private research organizations.

Our products compete with autograft, hollow-tube conduits, commercially available wraps, and amnion products, as well as with alternative medical procedures. For the foreseeable future, we believe a significant number of surgeons will continue to choose to perform autograft procedures when feasible, despite the necessity of performing a second operation and its drawbacks. In addition, many members of the medical community will continue to prefer the use of hollow-tube conduits due in part to their familiarity with these products and the procedures required for their use. Amnion products are widely available, and we may not be able to distinguish the Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, from such other products so as to produce significant revenue from its distribution. Also, steady improvements have been made in synthetic human tissue substitutes, which could compete with our products in the future. Unlike allografts, synthetic tissue technologies are not dependent on the availability of human or animal tissue. Although our growth strategy contemplates the introduction of new technologies, the development of these technologies is a complex and uncertain process, which require a high level of innovation, as well as the ability to accurately predict future technology and market trends. We may not be able to respond effectively to technological changes and emerging industry standards, or to successfully identify, develop or support

new technologies or enhancements to existing products in a timely and cost-effective manner, if at all. There can be no assurance that in the future our competitors will not develop products that have superior performance or are less expensive relative to our products, rendering our products obsolete or noncompetitive. In this regard, Integra and Baxter each have or will commercialize a product consisting of a hollow tube conduit filled with material which they suggest is superior to their current hollow conduit products. Due to our limited resources, smaller size, and relatively early stage, we may face competitive challenges from these new products or existing products and barriers that are difficult to overcome and could negatively impact our growth. Finally, a Chinese company provides a human peripheral nerve allograft in China; however, such product is not sold in our markets of interest because of the protection afforded by our intellectual property.

We must maintain high quality processing of our products.

Our Avance Nerve Graft is processed through our Avance Method, which requires careful calibration and precise, high-quality processing and manufacturing. Our Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, is also human tissue that requires skill in its processing. Achieving precision and quality control requires skill and diligence by our personnel. If we fail to achieve and maintain these high levels of quality control and processing standards, including avoidance of processing errors, defects, or product failures, we could experience recalls or withdrawals of our product, delays in delivery, cost overruns or other problems that would adversely affect our business. We cannot completely eliminate the risk of errors, defects or failures and could experience quality system issues where corrective actions must be taken. In addition, we may experience difficulties in scaling-up processing of our Avance and Avive products, including problems related to yields, quality control and assurance, tissue availability, adequacy of control policies and procedures, and lack of skilled personnel. If we are unable to process and produce our human tissue products on a timely basis, at acceptable quality and costs, and in sufficient quantities, or if we experience unanticipated technological problems or delays in production, our business, results of operations, financial condition, and prospects would be adversely affected.

Our revenue depends upon prompt and adequate reimbursement from public and private insurers and national health systems.

Political, societal, economic, and regulatory influences are fundamentally changing the U.S. healthcare industry. The ability of a hospital or an ambulatory surgery center to pay fees for our products depends in part on the availability of adequate coverage and reimbursement from third-party payors for our products specifically, the procedures associated with the use of our products, or both. Providers that purchase our products generally rely on third-party payors to reimburse all or part of the costs and fees associated with the procedures performed with our products or the products themselves. Therefore, adequate coverage and reimbursement from third-party payors, including government payors such as Medicare and Medicaid, is important for obtaining product acceptance and widespread adoption in the marketplace.

When our products are used in the operating room of a hospital, they are commonly treated as general supplies utilized in surgery, and the cost is included in payment to the facility for the procedure. When Avance Nerve Graft and Axoguard Connector are used in an outpatient setting where the nerve repair is the primary reason for the procedure, facilities may use a Category I CPT code to facilitate payment.

In January 2018, the American Medical Association created a Category I CPT code (64912) specific to nerve repair with nerve allograft (Avance Nerve Graft) and a separate code (+64913) for each additional strand of allograft used in a procedure. Category I CPT codes are used by providers to facilitate payment to the provider (either hospital or ambulatory surgery center) for outpatient procedures. Additionally, Category I CPT codes are used to facilitate payment to the surgeon, for both time spent in outpatient and inpatient procedures. Prior to January 2018, there was no designated Category I CPT code for nerve repair cases that included nerve allograft. The Category I CPT code specific to nerve repair with nerve allograft, has allowed for nerve allograft repair cases to be uniquely identified in the Medicare claims data. This in turn allowed CMS visibility to nerve allograft nerve procedure costs, and thereby confirm that nerve allograft qualified as a device intensive procedure.

Another important change in nerve repair reimbursement occurred in January 2020, when most direct repair procedures were moved from the higher paying level 2 nerve repair Ambulatory Payment Category 5432 to the lower paying level 1 Ambulatory Payment Category 5431, thus aligning payment rates more consistently with the lesser costs of a direct repair.

As a result of the allograft device intensive status and direct repair Ambulatory Payment Category realignment, CMS reimbursement rates for nerve repair in the outpatient setting have changed significantly during the last two years. With the new 2022 CMS reimbursement rates for nerve repair in the outpatient setting that became effective January 1st, reimbursement for procedures using Avance have increased 28% in hospital outpatient centers and 102% in ambulatory surgery centers since 2019. During this same timeframe, reimbursement rates for procedures involving conduits and connectors also increased 28% in hospital outpatient centers and 49% in ambulatory surgery centers. While Medicare patients represent a relatively small percentage of trauma cases, CMS' direction often influences commercial payor policies and payments.

The process for securing coding for a product or procedure is separate from the process of securing coverage and establishing a reimbursement payment rate. In the U.S., coverage and reimbursement for medical devices varies among payors. In addition, payors review coverage policies on an ongoing basis and can change or deny coverage for these new products and procedures without notice. We estimate that commercial payors covering a significant number of U.S. covered lives have legacy non-coverage policies relating to our Avance Nerve Graft, Avive Soft Tissue Membrane (which we have voluntarily suspended from the market), and our Axoguard product lines, designating these products investigational or experimental. Some commercial payors do not currently cover or reimburse our products because they have determined insufficient evidence of favorable clinical outcomes is available. Although some payors consider Avance Nerve Graft, Avive Soft Tissue Membrane (which we have voluntarily suspended from the market), and our Axoguard product lines investigational or experimental at this time, these payors may in the future determine sufficient evidence has been developed to cover and reimburse our products and related procedures. In partnership with healthcare providers, we are working actively to reverse these non-coverage decisions and have been successful with several regional plans in 2020 and 2021. However, we cannot provide assurance that we will continue to be successful in these efforts. If we are not successful in reversing existing non-coverage policies, or if other third-party payors issue similar policies, this could have a material adverse effect on our business and operations. Further, third-party payors who currently cover and reimburse customers for procedures using our products may in the future choose to decrease current levels of reimbursement or eliminate reimbursement altogether, which would cause our business to suffer.

The amount of reimbursement received by our customers from third-party payors is dependent generally on fee schedules established by these payors for the existing CPT codes. For governmental payors, such as Medicare and Medicaid, the fee schedule amount is determined by statutory and regulatory formulas as previously discussed. For commercial payors, the reimbursement amount generally is dependent upon the specific contract terms between the provider and payor. We cannot provide assurance that government or commercial payors will continue to reimburse for procedures with our products using the existing codes, nor can we provide assurance that the payment rates will be adequate. If providers and physicians are unable to obtain reimbursement for the procedure at adequate levels when use of our products is included, this could have a material adverse effect on our business and operations. Hospitals and ambulatory surgery centers may not purchase our products if they do not receive payment sufficient to cover the cost of our products and related procedures. In addition, in the event that the current coding and/or payment methodology for these procedures changes, this could have a material effect on our business, results of operations, financial condition, and prospects.

Negative publicity concerning methods of donating human tissue and screening of donated tissue may reduce demand for our products and negatively impact the supply of available donor tissue.

We are highly dependent on our ability to recover human peripheral nerve tissue from tissue donors for our Avance Nerve Graft product and acquire birth tissue for our Avive Soft Tissue Membrane, which we have voluntarily suspended from the market. The availability of acceptable donors is relatively limited, and this availability is impacted by regulatory changes, general public opinion of the donation process, and our reputation for handling the donation process. Media reports or other negative publicity concerning both improper methods of tissue recovery from donors and disease transmission from donated tissue, including bones and tendons, may limit widespread acceptance of our Avance Nerve Graft and Avive Soft Tissue Membrane. Unfavorable reports of improper or illegal tissue recovery practices, both in the U.S. and internationally, as well as incidents of improperly processed tissue leading to transmission of disease, may broadly affect the rate of future tissue donation and market acceptance of allograft technologies and donated tissue use. Potential patients may not be able to distinguish our products, technologies, and tissue recovery and processing procedures from others engaged in tissue recovery. In addition, unfavorable reports could make families of our potential donors or donors themselves from whom we are required to obtain consent before processing tissue reluctant to agree to donate tissue to for-profit tissue processors. Any disruption in the supply caused by these publicity issues could have a material impact for our business, results of operations, financial condition, and prospects.

The failure of third parties to perform many necessary services for the commercialization of our products, including services related to recovery/acquisition, distribution, and transportation, would impair our ability to meet commercial demand.

We rely upon third parties for certain recovery/acquisition, distribution, and transportation services for our products. If any of the third parties that we rely upon in our recovery/acquisition, distribution or transportation process fail to comply with applicable laws and regulations, fail to meet expected deadlines, or otherwise do not carry out their contractual duties, experience delays due to the ongoing COVID-19 pandemic, or encounter physical damage or natural disaster at their facilities, our ability to deliver product to meet commercial demand may be significantly impaired, which could have a material adverse impact on our business, results of operations, financial condition or prospects.

We are dependent on our relationships with independent agencies to generate a material portion of our revenue.

We derive material revenue through our relationships with independent agencies. In 2021, approximately 12% of global product revenue was generated through independent agencies. If certain agency relationships were terminated or discontinued for any reason, it could adversely affect our ability to generate revenue and profit. If we require additional agencies, we may not be able to find additional agencies who will agree to market and distribute our products on commercially reasonable terms, if at all. If we are unable to establish new agency relationships or renew certain current distribution agreements on commercially acceptable terms, our business, results of operations, financial condition, and prospects could be materially and adversely impacted.

If we do not manage product inventory in an effective and efficient manner, it could adversely affect profitability.

Many factors affect the efficient use and planning of product inventory, such as our ability to predict demand for donor tissue, prepare manufacturing to meet that demand and product mix and handle product expiration. We may be unable to manage our inventory efficiently, keep inventory within expected budget goals, keep our work-in-process inventory on hand or manage it efficiently, control expired product or keep sufficient product on hand to meet demand. Finally, we can provide no assurance that we can keep inventory costs within our target levels, particularly in light of overall cost increases due to global inflation. Failure to do so may materially and adversely impact our business, results of operations, financial condition, and prospects.

Our operating results could be adversely impacted if we are unable to effectively manage and sustain our future growth or scale our operations.

There can be no assurance that we will be able to manage our future growth efficiently or profitably. Our business is unproven on a large scale, and actual revenue and operating margins, or revenue and margin growth, may be less than expected. If we are unable to scale our production capabilities efficiently or maintain pricing without significant discounting, we may fail to achieve expected operating margins, which would have a material and adverse effect on our operating results. Growth may also stress our ability to adequately manage our operations, quality of products, safety, and regulatory compliance. Failure to implement necessary procedures, equipment, or processes or to hire the necessary personnel in a timely and effective manner could result in higher costs or an inability to meet market demand and could have a material adverse impact on our business, results of operations, financial condition, and prospects. Additionally, our future growth will increase the demands placed on our third-party suppliers, and there is no guarantee that our suppliers will be able to support our anticipated growth. If growth significantly decreases, it will negatively impact our cash reserves, and we may be required to obtain additional financing, which may increase indebtedness or result in dilution to shareholders. Further, there can be no assurance that we would be able to obtain additional financing on acceptable terms, if at all.

There may be significant fluctuations in our operating results.

Significant quarterly fluctuations in our results of operations may be caused by, among other factors, our volume of revenue, seasonal changes in nerve repair activity, timing of sales force expansion, unforeseen restrictions on our ability to access healthcare providers such as during the COVID-19 pandemic, and general economic conditions. There can be no assurance that the level of revenue and profit, if any, we achieve in any particular fiscal period, will not be significantly lower than in other comparable fiscal periods. Our expense levels are based, in part, on our expectations as to future revenue. As a result, if future revenue is below expectations, net income or loss may be disproportionately affected by a reduction in revenue, as any corresponding reduction in expenses may not be proportionate to the reduction in revenue.

We may be unsuccessful in commercializing our products outside the U.S.

To date, we have focused our commercialization efforts in the U.S., except for minor revenue in certain foreign countries. We intend to expand distribution and sales outside the U.S. and will need to comply with applicable foreign regulatory requirements, including obtaining the requisite approvals to do so. The regulatory environment for our portfolio of products is complex. Avance Nerve Graft is distributed in Canada, the UK, and certain other countries. We received approval to distribute Avance Nerve Graft in Germany in December 2019. Avance use in Spain currently requires approval for each case to be approved by tissue authorities under an alternative therapies designation. The Axoguard Nerve Connector and Nerve Protector CE has been renewed as of May 2021 by Cook Biotech.

In January 2020, the UK exited the E.U. (“Brexit”) following a transition period that ended on December 31, 2020. Brexit could continue to disrupt trade between the UK and the E.U. or other nations, as the UK pursues independent trade regulations. It is still unclear exactly how Brexit will affect legislative and regulatory systems within the UK, as many decisions are left to be made that will determine how far the UK will choose to diverge from existing E.U. rules. Therefore, we cannot be sure what changes could occur or the cost of regulatory compliance with both the UK and the E.U. going forward. Until such time as we

can obtain, if at all, the necessary registrations and approvals for our products, material expansion beyond the U.S. will be limited. Finally, the cost of regulatory compliance for sales outside the U.S. can be significant and time consuming.

Further, we will need to either enter into distribution agreements with third parties or develop a direct sales force in foreign markets. If we do not obtain adequate levels of reimbursement from third-party payers outside of the U.S., we may be unable to develop and grow our revenue internationally. Outside of the U.S., reimbursement systems vary significantly by country. Many ex-U.S. markets have government-managed healthcare systems that govern reimbursement for medical devices, implants, and procedures. Some ex-U.S. reimbursement systems provide for limited payments in a given period and therefore result in extended payment periods. If we are unable to successfully commercialize our products internationally, our long-term growth prospects may be limited.

We incur costs as a result of operating as a public company, and our management is required to devote substantial time to compliance initiatives.

As a public company, we incur legal, accounting, and other expenses to comply with relevant securities laws and regulations, including without limitation, the requirement of establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management devotes substantial time and financial resources to these compliance initiatives. Failure to comply with public company requirements could have a material adverse effect on our business. In addition, activity by shareholders or others that bring into question aspects of our business, financial reporting, or management's integrity, whether based on facts, beliefs or baseless and contrived for individual economic gain, can have a negative impact on the price of our stock and can result in substantial time and financial resources being expended to address the situation.

Changes in the tax code could have a material adverse effect on our results of operations, financial condition, liquidity, and capital investments.

In recent years, political discourse has centered on potential changes in tax laws or tax rulings. Certain of these changes could negatively affect our financial condition. In addition, our ability to use net operating loss and tax credit carryforwards and certain built-in losses to reduce future tax payments may be limited by provisions of the Internal Revenue Code, and it is possible that certain transactions or a combination of certain transactions may result in material additional limitations on our ability to use our net operating loss and tax credit carryforwards.

Risks Related to the Regulatory Environment in which the CompanyOperates

Our business is subject to continuing regulatory compliance by the FDA and other authorities, which is costly and could result in negative effects on our business.

We are subject to extensive regulation by foreign and domestic government entities, including compliance with regulations governing appropriate relationships with healthcare professionals, such as physicians, hospitals, and those to whom and through whom we may market our products. We are subject to various federal, state, and territorial laws in the U.S. and other jurisdictions in which we conduct business. These include, for example, anti-kickback laws, false claims laws, healthcare fraud, waste, and abuse laws, and anti-bribery laws such as the U.S. Foreign Corrupt Practices Act. Violations of these laws can be punishable by criminal and/or civil sanctions, including, in some instances, fines, imprisonment and, within the U.S., exclusion from participation in government healthcare programs, including Medicare, Medicaid, and Veterans Administration health programs. These laws are administered and enforced by, among others, the DOJ, which issued new compliance guidance in 2020, the Office of Inspector General of the Department of Health and Human Services, state attorneys general, and their respective counterparts in the applicable foreign jurisdictions in which we conduct business. Many of these agencies have increased their enforcement activities with respect to medical device manufacturers in recent years. There can also be changes to the regulations by foreign and domestic government entities that require us to update or upgrade business processes or to perform additional validation activities for product or processes. Compliance with such changes can be costly to implement or result in non-compliance, thus restricting the ability to distribute tissue or sell products, which could have a material adverse effect on our business, results of operations, financial condition, and prospects.

Our products are also subject to regulation by the FDA in the U.S. The FDA regulates the development, pre-clinical and clinical testing, requirements for commercial marketing and distribution, manufacturing and quality, safety, labeling, and promotion of human cell and tissue products (HCT/Ps), medical devices, and biological products. The FDA requires the approval of a biological product, like Avance Nerve Graft, through a BLA prior to marketing. Although the Avance Nerve Graft product has not yet been approved by FDA through a BLA, FDA is permitting the product to be distributed, subject to FDA enforcement discretion, provided that we: (1) transition to compliance with section 501(a)(2)(B) of the FD&C Act, the cGMP regulations in 21 CFR Parts 210 and 211 and the applicable regulations and standards in 21 CFR Parts 600-610 prior to initiation of a phase 3 clinical trial designed to demonstrate the safety, purity, and potency of Avance Nerve Graft; (2) conduct a

phase 3 clinical trial to demonstrate safety, purity, and potency of Avance Nerve Graft under an SPA; (3) continue to comply with the requirements of 21 CFR Part 1271; and (4) exercise due diligence in executing the transition plan. See "Business — Government Regulations — U.S. Government Regulation Overview."

The FDA also regulates medical devices, for example the Axoguard products, and generally requires them to be cleared through the 510(k) pre-market notification process prior to marketing or through other pre-market approval processes. The FDA's pre-market review process for new and modified existing devices that precedes product marketing can be time consuming and expensive. Some of the future products and enhancements to such products that we expect to develop and market may require marketing clearance or approval from the FDA.

There can be no assurance, however, that clearance or approval will be granted with respect to any of our medical device products or enhancements of marketed products or that our Avance Nerve Graft will meet FDA's requirements for continued marketing and transition to a BLA or ultimately an approved BLA. FDA review of our devices or biological products may encounter significant delays during FDA's pre-market review process that would adversely affect our ability to market our products or enhancements. In addition, there can be no assurance that our products, including the Avance Nerve Graft, or enhancements will not be subject to a lengthy and expensive approval process with the FDA.

It is possible that if regulatory clearances or approvals to market a product are obtained from the FDA, the clearances or approvals may contain limitations on the indicated uses of such product and other uses may be prohibited. Product approvals by the FDA can also be withdrawn due to failure to comply with regulatory standards or the occurrence of unforeseen problems following initial approval. Furthermore, the FDA could limit or prevent the distribution of our products, and the FDA has the authority to require the recall of such products. FDA regulations depend heavily on administrative interpretation, and there can be no assurance that future interpretations made by the FDA or other regulatory bodies will not adversely affect our business, results of operations, financial condition, and prospects. We, and our facilities, may be inspected by the FDA from time to time to determine whether it is in compliance with various regulations relating to specifications, development, documentation, validation, testing, manufacturing, quality control and product labeling. A determination that we are in violation of such regulations could lead to imposition of civil penalties, including fines, product recalls or product seizures and, in certain cases, criminal sanctions.

We have suspended market availability of our Avive Soft Tissue Membrane and there is no guarantee it will be placed back on the market.

Effective June 1, 2021, we voluntarily suspended the market availability of Avive Soft Tissue Membrane. The decision to suspend market availability of Avive was made following a communication with the FDA on May 14, 2021 regarding the appropriate classification and regulatory approval requirements for Avive. The suspension of market availability was not based on any patient safety or product performance issues or concerns associated with Avive Soft Tissue Membrane, a product that had been marketed by Axogen and routinely used by surgeons for patient care since 2016.

Avive is a processed human umbilical cord intended for surgical use as a resorbable soft tissue barrier and was processed and distributed in accordance with U.S. FDA requirements as a 361 HCT/P tissue product. In November 2017, the FDA outlined a regenerative medicine policy framework including guidance on the regulatory considerations for HCT/Ps and the potential for relevant products to be classified as a drug, device, or biological product subject to pre-market approval requirements. The policy requires manufacturers to confirm the classification and regulatory approval requirements for relevant products and allowed for a compliance and enforcement discretion period through May 31, 2021. We have been in dialogue with the FDA to determine the appropriate regulatory classification and requirements for Avive. We will continue discussions with the FDA with the goal of returning Avive to the market. There is no guarantee, however, that we will return Avive to the market.

The use, misuse or off-label use of our products may harm our reputation, the image of our products, result in injuries leading to product liability suits, which could be costly to our business, or result in FDA sanctions.

If our products are misused or used for off-label purposes, our reputation and our product's reputation may suffer, injuries could occur, which may lead to product liability litigation, or we may be subject to FDA sanctions if we are deemed to have engaged in off-label promotion. We are seeking a biologics license through the BLA process for specific uses of Avance Nerve Graft under specific circumstances. Our promotional materials and training methods must comply with FDA requirements and other applicable laws and regulations, including the prohibition against off-label promotion. Our promotion of the Axoguard products, which are regulated as medical devices, also must comply with FDA's requirements, and must only use labeling that is consistent with the specific indication(s) for use included in the FDA substantial equivalence order that results in marketing the devices. Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, was processed and distributed in accordance with FDA requirements for (HCT/P) under 21 CFR Part 1271 regulations and is to be dispensed only by or on the order of a licensed physician and is contraindicated for use in any patient in whom soft tissue implants are

contraindicated. The FDA does not restrict or regulate a physician's use of a medical product within the practice of medicine, and we cannot prevent a physician from using our products for an off-label use. However, the FD&C Act and the FDA's regulations restrict the kind of promotional communications that may be made about our products, and if the FDA determines that our promotional or training materials constitute the unlawful promotion of an off-label use, it could request that we modify training or promotional materials and/or subject the Company to regulatory or enforcement actions, including the issuance of an untitled letter, a warning letter, civil money penalties, seizure, injunction or criminal fines, and penalties. Other federal, state, or foreign governmental authorities might also take action if they consider our promotion or training materials to constitute promotion of an uncleared or unapproved use, which could result in significant fines or penalties under other statutory authorities, such as laws prohibiting false claims for reimbursement, or exclusion from participation in federal health programs. In that event, our reputation could be damaged and our products' use in the marketplace could be impaired.

There may be increased risk of injury if physicians or others attempt to use our products off-label. Furthermore, the use of our product for indications other than those for which our products have been approved, cleared, or licensed by the FDA may not effectively treat the conditions not referenced in product indications, which could harm our reputation in the marketplace among physicians and patients. Physicians may also misuse our products or use improper techniques if they are not adequately trained in the particular use, potentially leading to injury and an increased risk of product liability litigation. Product liability claims are expensive to defend and could divert management's attention from our primary business and result in substantial damage awards against us. Any of these events could harm our business, results of operations, financial condition, and prospects.

Our Avance Nerve Graft product is currently allowed to be distributed pursuant to a transition plan with the FDA and a change in position by the FDA regarding its use of enforcement discretion to permit the sale of Avance Nerve Graft would have a material adverse effect on us.

The FDA considers our Avance Nerve Graft product to be a biological product, subject to BLA approval requirements. Although the Avance Nerve Graft product has not yet been approved by the FDA through a BLA, it is currently distributed under the controls applicable to a HCT/P pursuant to Section 361 of the Public Health Service Act and 21 CFR Part 1271 of FDA's regulations, subject to FDA's enforcement discretion and our compliance with a transition plan established by the FDA. See "Business — Government Regulations — U.S. Government Regulation Overview." We have continued to communicate with the CBER since the acceptance of the transition plan on clinical trial design, pre-clinical studies, CMC for Avance Nerve Graft, and other issues related to the effective IND. Subject to the FDA's enforcement discretion, we can commercially distribute Avance Nerve Graft until the FDA makes a final determination on an Avance Nerve Graft BLA submission, assuming we remain in compliance with the transition plan and exercise due diligence in executing the transition plan. In the event that the FDA becomes dissatisfied with our progress or actions with respect to the transition plan or the FDA changes its position for any reason regarding its use of enforcement discretion to permit us to distribute the Avance Nerve Graft product in accordance with the transition plan, we would no longer be able to distribute Avance Nerve Graft, which would have a material adverse effect on our operations and financial viability. In addition, if we do not meet the conditions of the transition plan, or fail to comply with applicable regulatory requirements, the FDA could impose civil penalties, including fines, product seizures, injunctions, or product recalls and, in certain cases, criminal sanctions. These consequences also would have a material adverse effect on our operations and financial viability.

Our business is subject to continuing compliance to standards by various accreditation and registration bodies which is costly, and loss of accreditation or registration could result in negative effects on our business.

We are subject to accreditation such as that by the AATB and as a National Association of Boards of Pharmacy (NABP) Accredited Drug Distributors. We have registration requirements such as that with ISO 13485 registration bodies. These accreditations and regulations can affect distribution and sale of our products on a state-by-state basis, within the U.S. and also affects distribution and sale of our products outside of the U.S. The loss of accreditation or registration could keep us from selling and distributing our products, which may have negative effects on our business, results of operations, financial condition, and prospects.

Our Axoguard products are subject to FDA and international regulatory requirements.

Our Axoguard product line is regulated as a medical device in the US and international countries where we market Axoguard products. In the U.S., Axoguard product line is regulated under the FD&C Act and subject to pre-market notification and clearance requirements under section 510(k) of the FD&C Act, 21 CFR Part 820 (Quality System Regulation) and other FDA regulations. In the rest of the world, each region (such as the E.U.) or country has their independent international regulations such as the Medical Device Regulations (CE Mark) in Europe, UK Medicines and Healthcare products Regulatory Agency (MHRA), and Taiwan Pharmaceutical Affairs Act.

We distribute Axoguard Nerve Connector and Axoguard Nerve Protector products for Cook Biotech, and Cook Biotech is responsible for the regulatory compliance of these products. In the U.S., Cook Biotech has obtained a 510(k) pre-market clearance for Axoguard Nerve Connector from the FDA for porcine (pig) small intestine submucosa for the repair of peripheral nerve transections where gap closure can be achieved by flexion of the extremity. Cook Biotech has also obtained a 510(k) pre-market clearance for Axoguard Nerve Protector for the repair of peripheral nerve damage in which there is no gap or where a gap closure is achieved by flexion of the extremity. In countries where Axoguard is marketed, Cook Biotech has obtained regulatory clearance with the same indications except for Europe and the UK. For the CE Mark, the Axoguard Nerve Protector indication is the same; however, for Axoguard Nerve Connector, the indication is more specific - "The Axoguard Nerve Connector is indicated for the repair of peripheral nerve discontinuities with gaps up to 5 mm."

We are responsible for the regulatory compliance of the Axoguard Nerve Cap. We have obtained a 510(k) pre-market clearance for Axoguard Nerve Cap to protect a peripheral nerve end and separate the nerve from the surrounding environment and to prevent or to reduce the development of symptomatic or painful neuroma.

If we or Cook Biotech fail to comply with applicable regulatory requirements, the regulatory bodies in each country could deny or withdraw regulatory clearance/approval for the Axoguard products, or impose civil penalties, including fines, product seizures or product recalls and, in certain cases, criminal sanctions.

Defective products could lead to recall or other negative business conditions.

If our products are defective or otherwise pose safety risks, the FDA could require their recall, or we may initiate a voluntary recall of our products. The FDA may require recall of a marketed medical device product, such as the Axoguard products, in the event that it determines the medical device presents a reasonable probability of serious adverse health consequences or death. However, most device recalls do not rise to this level of health significance and result from voluntary action. The FDA has authority to recall biological products when a batch, lot or other quantity of the product presents an imminent or substantial hazard to the public health. However, in such circumstances, the FDA usually initially requests voluntary recalls of biological products, such as the Avance Nerve Graft. If a company does not comply with an FDA request for a recall, the FDA can order one under the above-referenced circumstances or take other enforcement actions, such as product seizure. In addition, manufacturers may, on their own initiative, recall a product to remove or correct a deficiency or to remedy a violation of the FD&C Act that may pose a risk to health. A government-mandated, government-requested, or voluntary recall could occur as a result of an unacceptable risk to health, reports of safety issues, failures, manufacturing errors, design or labeling defects or other deficiencies, and issues. Recalls and other field corrections for any of our products would divert managerial and financial resources and have an adverse effect on our business, results of operations, financial condition, and prospects. A recall could adversely impact our reputation with customers and our sales. If the FDA were to disagree with our internal determinations and decision making relative to potential recalls (including corrections and removal), we could be subject to further regulatory or enforcement action against.

If our products cause or contribute to a death, a serious injury, or any adverse reaction involving a communicable disease, or malfunction in certain ways, we will be subject to reporting regulations, which can result in voluntary corrective actions or agency enforcement actions. See "Business — Regulation — Education Grants, U.S. Anti-kickback, False Claims and Other Healthcare Fraud and Abuse Laws." If we fail to report these events to the FDA within the required timeframes, or at all, the FDA could take regulatory or enforcement action against us. Any adverse event involving our products could result in future voluntary corrective actions, such as recalls or customer notifications, or agency action, such as inspection, mandatory recall, or other enforcement action. Any corrective action, whether voluntary or involuntary, as well as defending ourselves in a lawsuit, would require the dedication of time and capital, distract management from operating our business, and may adversely impact our reputation, business, results of operations, financial condition, and prospects.

Our operations must comply with FDA and other governmental requirements.

Our operations require us to comply with the FDA's and other governmental authorities' laws and regulations on the topics including the manufacture and production and sales and marketing of medical products, and compliance efforts related to such laws is costly, and failure to comply could subject us to enforcement action. See "Business — Government Regulations — Education Grants, U.S. Anti-kickback, False Claims and Other Healthcare Fraud and Abuse Laws — Fraud, Abuse and False Claims." Enforcement actions could impair our ability to produce products in a cost-effective and timely manner to meet customer demands. We may also be required to bear other costs or take other actions that may have an adverse impact on our future revenue and our ability to generate profits. Furthermore, our key material suppliers, licensors and or other contractors may not continue to be in compliance with all applicable regulatory requirements, which could result in our failure to produce products on a timely basis and in the required quantities, if at all.

Healthcare providers and facilities, and third-party payors, often play a primary role in the recommendation and prescription of any currently marketed products and product candidates for which we may obtain marketing approval. Our

current and future arrangements with healthcare providers and facilities, third-party payors and customers, and our sales, marketing, and educational activities, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations (at the federal and state level) that may constrain our business or financial arrangements and relationships through which we market, sell, and distribute our products for which we obtain marketing approval. In addition, our operations are also subject to various federal and state fraud and abuse, and payment transparency.

Payments made to physicians and other healthcare providers, and other financial interests, have been the subject of a range of federal and state laws. The federal physician payment transparency requirements, sometimes referred to as the Physician Payments Sunshine Act, or the Sunshine Act, was created under the Affordable Care Act ("ACA"). The Sunshine Act, among other things, imposes reporting requirements on drug manufacturers for payments or other transfers of value made by them to physicians and teaching hospitals, as well as ownership and investment interests held by physicians, other healthcare providers, including physician assistants, nurse practitioners, and other mid-level healthcare practitioners, and their immediate family members. Reporting relative to these mid-level practitioners begins this year for payments or other transfers of value in 2021, which could increase the likelihood of a mistake in submission or failure to submit the required information by that group. Failure to submit required information may result in civil monetary penalties of up to an aggregate of $150,000 per year and up to an additional aggregate of $1 million per year for “knowing failures,” for all payments, transfers of value or ownership or investment interests that are not timely, accurately, and completely reported in an annual submission. Additionally, certain states also mandate implementation of compliance programs, impose restrictions on marketing practices and/or require the tracking and reporting of gifts, compensation and other remuneration to physicians and other HCPs.

In addition to the federal fraud, waste, and abuse laws noted, there are analogous state laws and regulations, such as state anti-kickback and false claims laws, and other state laws addressing the medical product and healthcare industries, which may apply to items or services reimbursed by any third-party payor, including commercial insurers, and in some cases may apply regardless of payor, i.e., even if reimbursement is not available. Some state laws require pharmaceutical or device companies to comply with the industry's voluntary compliance guidelines (the PhRMA Code and AdvaMed Code) and the relevant compliance program guidance promulgated by the federal government (HHS-OIG) in addition to other requirements, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Distribution of our human tissue products outside the U.S. are subject to foreign regulatory requirements that vary from country to country. In the E.U., human tissue regulations, if applicable, differ from one E.U. member state to the next. Because of the absence of a harmonized regulatory framework and the proposed regulation for advanced therapy medicinal products in the E.U., as well as for other countries, the approval process for human derived cell or tissue based medical products may be extensive, lengthy, expensive, and unpredictable. Our products are subject to E.U. member states’ regulations that govern the donation, procurement, testing, coding, traceability, processing, preservation, storage, and distribution of human tissues and cells and cellular or tissue-based products. In addition, some E.U. member states have their own tissue banking regulations. The inability to meet foreign regulatory requirements could materially affect our future growth and compliance with such requirements could place a significant financial burden on us. As a result of Brexit, we cannot be sure what changes could occur or the cost of regulatory compliance with the UK. Accordingly, the cost of regulatory compliance for sales outside the U.S. can be significant and time consuming.

Finally, regulations in both the U.S. and other countries are subject to constant change. There can be no assurance that we can meet the requirements of future regulations or that compliance with current regulations assures future capability to distribute and sell our products.

Clinical trials can be long, expensive and results are ultimately uncertain, which could jeopardize our ability to obtain regulatory approval and continue to market our Avance Nerve Graft product.

We are required to perform a clinical trial for our Avance Nerve Graft under FDA’s statutory requirements to obtain approval of a BLA for the product. This trial is expensive, is expected to take several years to execute, is subject to factors within and outside of our control, and the outcome is uncertain.

We submitted an IND for the RECON study of Avance Nerve Graft in April 2013 and received FDA approval in March 2015. The phase 3 clinical trial was initiated in the second quarter of 2015. The RECON study was designed to assess the outcome of peripheral nerve repair in approximately 170 subjects in up to 20 centers. As required by the SPA and agreed to by the FDA and us, an independent statistical analysis was conducted to determine if greater study enrollment was appropriate to maintain the planned statistical power of the study. Based on the results of this analysis, the study’s independent biostatistician recommended a one-time expansion in enrollment according to a pre-defined sample size re-estimation. The recommendation was reviewed with the FDA, and on April 19, 2019, the FDA provided the Company with a Revised SPA agreement that confirmed the expanded sample size and allowed the study enrollment target to be increased by 50 subjects, to a total target of 220 subjects and add up to five new study centers, for a total of 25 centers, to support enrollment. Enrollment was completed in

July of 2020 and follow-up of the last RECON subject was completed in August 2021. The study remains on schedule with a top line study data read-out expected in the second quarter of 2022, followed by filing of the BLA submission in 2023.

We are working to ensure compliance with the applicable regulations by having ongoing discussions on the transition of the quality system to 21 CFR Parts 210/211 and 600-610 regulations with the FDA. Final determination of regulatory compliance with 21 CFR Parts 210/211 and 600-610 will be made during FDA's pre-license inspection as part of the BLA review. The approval of our BLA would not occur or could be delayed, if the FDA is unable to agree with us, or we are unable to meet the standards required by the FDA regarding pre-clinical studies, clinical studies, and CMC.

We continue to work diligently with the FDA and, in this context, continue to distribute the Avance Nerve Graft products. The FDA will end the period of enforcement discretion upon a final determination of our BLA submission or upon a finding that we do not meet the conditions for the transition plan or are not exercising due diligence in executing the transition (e.g., not progressing toward study completion or BLA submission in a timely or adequate fashion). If final action on the BLA is negative or we are found to not meet the conditions for the transition plan, we will not be able to continue to distribute Avance Nerve Graft, and our business, results of operations, financial condition, and prospects will be materially adversely affected.

The results of pre-clinical studies do not necessarily predict future clinical trial results and predecessor clinical trial results may not be repeated in subsequent clinical trials. Additionally, the FDA may disagree with our interpretation of the data from our pre-clinical studies and clinical trials and may require the company to pursue additional pre-clinical studies or clinical trials, or not approve our BLA. If we are unable to demonstrate the safety and efficacy of our product through our clinical trials, we will be unable to obtain regulatory approval to market the Avance Nerve Graft, and we will not be able to continue to provide it.

Axogen expects to approach the FDA with the Avance Nerve Graft BLA submission to review the use of Avance Nerve Graft in the whole body for peripheral nerve repair. Axogen will provide the FDA with Real World Evidence based primarily on Real World Data from the RANGER study for qualifying peripheral nerve repairs from multiple areas in the body. The FDA may restrict the Avance Nerve Graft labeling upon approval of the BLA if (1) the clinical results from the RECON study are not expected per the protocol and/or (2) the FDA does not accept the Real World Data from RANGER. We expect that restrictions to our labeling would have an adverse effect on Avance Nerve Graft.

We rely on third parties to conduct our clinical trials and they may not perform as contractually required or expected.

We rely on third parties, such as contract research organizations ("CROs"), medical institutions, clinical investigators, and contract laboratories to conduct our clinical trials and certain nonclinical studies. We and our CROs are required to comply with all applicable regulations governing clinical research, including good clinical practice ("GCP"). The FDA enforces these regulations through periodic inspections of trial sponsors, principal investigators, CROs and trial sites. If we or our CROs fail to comply with applicable FDA regulations, the data generated in our clinical trials may be deemed unreliable and the FDA may require us to perform additional clinical trials before approving our applications. We cannot be certain that, upon inspection, the FDA and similar foreign regulatory authorities will determine that our clinical trial complies or complied with clinical trial regulations, including GCP. In addition, our clinical trial must be conducted with product produced under applicable GCP regulations. Failure to comply with the clinical trial regulations, including GCP, may require us to repeat clinical trials, which would delay the regulatory approval process. Further, if these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, need to be replaced, or the quality or accuracy of the data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our non-clinical development activities or clinical trials may be extended, delayed, suspended or terminated, and we would not be able to obtain regulatory approval for our products on a timely basis, if at all, and our business, results of operations, financial condition, and prospects would be adversely affected. Furthermore, our third-party clinical trial investigators may be delayed in conducting our clinical trials for reasons outside of their control.

U.S. governmental regulation could restrict the use of our Avance Nerve Graft and Avive Soft Tissue Membrane product, restrict our procurement of tissue or increase costs.

In addition to the FDA requirements for biological products, Avance Nerve Graft, and Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, will continue to be subject to various requirements for human tissue under 21 CFR Part 1271. Human tissues intended for transplantation have been regulated by the FDA since 1993. In May 2005, three new comprehensive regulations went into effect that address manufacturing activities associated with HCT/P. The first regulation requires that companies that produce and distribute HCT/Ps register with the FDA. The second regulation provides criteria that must be met for donors to be eligible to donate tissues and is referred to as the "Donor Eligibility" rule. The third regulation governs the processing and distribution of the tissues and is often referred to as the "Current Good Tissue Practices" rule. The Current Good Tissue Practices rule covers all stages of allograft processing, from procurement of tissue to distribution of final allografts. Together, the three basic requirements of 21 CFR Part 1271 are designed to ensure that sound, high quality practices are followed to reduce the risk of tissue contamination and of communicable disease transmission to recipients. These

regulations increased regulatory scrutiny within the industry in which we operate and have led to increased enforcement actions, which affects the conduct of our business. In addition, guidance was issued by the FDA in November 2017 and revised in July 2020 on Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use, which could have potential implications on the regulatory status of Avive, which we have voluntarily suspended from the market, and future HCT/P products being evaluated by the Company.

Additional regulations or guidance documents may be implemented by the FDA in the future. These changes may impose new documentation requirements, process changes or testing that could increase costs, and regulatory burden. See "Business — Government Regulations." These regulations can also increase the cost of tissue recovery activities. Finally, Avance Nerve Graft and Avive Soft Tissue Membrane, which we have voluntarily suspended from the market, are subject to certain state and local regulations, as well as compliance with the standards of the tissue bank industry's accrediting organization, the AATB.

The procurement and transplantation of allograft nerve tissue is also subject to federal law pursuant to the National Organ Transplant Act ("NOTA"), a criminal statute that prohibits the purchase and sale of human organs used in human transplantation, including nerve and related tissue, for "valuable consideration." NOTA only permits reasonable payments associated with the removal, transportation, processing, preservation, quality control, implantation, and storage of human nerve tissue. We make payments to certain of our clients and tissue banks for their services related to recovering allograft nerve and umbilical cord tissue on its behalf. If NOTA is interpreted or enforced in a manner that prevents us from receiving payment for services we render or prevents us from paying tissue banks or certain of our clients for the services they render for us, our business, results of operations, financial condition, and prospects could be materially and adversely affected.

We have engaged, through marketing employees, independent sales agents and sales representatives, in ongoing efforts designed to educate the medical community as to our products' benefits, and we intend to continue our educational activities. Although we believe that NOTA permits payments in connection with these educational efforts as reasonable payments associated with the processing, transportation and implantation of our products, payments in connection with such education efforts are not exempt from NOTA's restrictions and our inability to make such payments in connection with these education efforts may prevent us from paying our sales representatives and could adversely affect our business, results of operations, financial condition, and prospects. No federal agency or court has determined whether NOTA is, or will be, applicable to every allograft nerve tissue-based material that our processing technologies may generate. Assuming that NOTA applies to our processing of allograft nerve and umbilical cord tissue, we believe that we comply with NOTA, but there can be no assurance that more restrictive interpretations of, or amendments to, NOTA will not be adopted in the future, which would call into question one or more aspects of our method of operations.

Other regulatory entities include state agencies with statutes covering tissue banking. Regulations issued by Florida, New York, California, and Maryland, among other states, are particularly relevant to our business. Most states do not currently have tissue banking regulations. However, incidents of allograft related issues in the industry may stimulate the development of regulation in other states. It is possible that third parties may make allegations against us or against donor recovery groups or tissue banks about non-compliance with applicable FDA regulations or other relevant statutes or regulations. Allegations like these could cause regulators or other authorities to take investigative or other action or could cause negative publicity for our business and the industry in which we operate.

Our Axotouch product is subject to FDA and other regulatory requirements.

Our Axotouch product is regulated as a Class 1 510(k) exempt medical device under the FD&C Act and not subject to pre-market notification and clearance requirements under section 510(k) of the FD&C Act, 21 CFR Part 820 (Quality System Regulation) and other FDA regulations. If we fail to comply with applicable regulatory requirements, the FDA could require a 510(k) for the product, or impose civil penalties, including fines, product seizures or product recalls and, in certain cases, criminal sanctions, which may adversely affect our business, results of operations, financial condition, and prospects.

Healthcare law and policy changes may have a material adverse effect on us.

In the U.S. there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities, and affect our ability, or the ability of our collaborators, to profitably sell any products for which we obtain marketing approval. We expect that current laws, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we, or our collaborators, may receive for any approved products.

Since enactment of the ACA in 2010 there have been a number of legal challenges as well as other legislative and regulatory changes to the healthcare system that could impact our ability to sell our products profitably. In June 2021, however, the Supreme Court issued its opinion in California v. Texas, upholding the constitutionality of the ACA. The full effects of the

ACA may be unknown as the statutory provisions are fully implemented, and CMS, the FDA, and other federal and state agencies issue final applicable regulations or guidance. These developments could potentially alter coverage and marketing requirements, thereby affecting our pricing and market share if individuals lose coverage for certain benefits.

In the future, there may continue to be additional proposals relating to the reform of the U.S. healthcare system. Future legislation, federal agency regulations and Presidential Executive Orders may impact the healthcare system in ways important to Axogen's business. Adoption of certain proposals could limit the prices we are able to charge for our products or the amounts of reimbursement available for our products and could also limit the acceptance and availability of our products. The adoption of some or all of these proposals could have a material adverse effect on our business, results of operations, financial condition, and prospects.

Additionally, initiatives sponsored by government agencies, legislative bodies, and the private sector in the U.S. and elsewhere to limit the growth of healthcare costs, especially for drugs and biologics, including price regulation and policies regarding generic drugs and biosimilars, are ongoing in markets where we do business. For example, the Department of Health and Human Services announced a comprehensive plan in September of 2021 to lower drug prices. Whether any of these proposals will become enacted is hard to predict, as congressional negotiations are ongoing. Regardless, government efforts to lower healthcare costs would affect our market materially. We could experience an adverse impact on operating results due to increased pricing pressure in the U.S. and in other markets. Governments, hospitals, pharmacy benefit managers ("PBMs"), and other third-party payors could reduce the amount of approved reimbursement for our products, deny coverage altogether, or impose new requirements on manufacturers to justify their prices. Reductions in reimbursement levels or coverage or other cost-containment measures could unfavorably affect our future operating results.

We could be subject to civil or criminal penalties if we are found to have violated laws protecting the confidentiality of health information, which could increase our liabilities and harm our reputation or our business.

There are a number of federal and state laws protecting the confidentiality of certain health information and restricting the use and disclosure of that protected information. In particular, the U.S. Department of Health and Human Services promulgated privacy rules under the Health Insurance Portability and Accountability Act ("HIPAA"). These privacy rules protect medical records and other personal health information by limiting their use and disclosure, giving individuals the right to access, amend and seek accounting of their own health information and limiting most use and disclosures of health information to the minimum amount reasonably necessary to accomplish the intended purpose. If we are found to be in violation of the privacy rules under HIPAA, we could be subject to civil or criminal penalties, which could increase our liabilities, harm our reputation, and have a material adverse effect on our business, results of operations, financial condition, and prospects.

Risks Related to Our Intellectual Property

Failure to protect our intellectual property rights could result in costly and time-consuming litigation and our loss of any potential competitive advantage.

Our success will depend, to a large extent, on our ability to successfully obtain and maintain patents, prevent misappropriation or infringement of intellectual property ("IP"), maintain trade secret protection, and conduct operations without violating or infringing on the IP rights of third parties. See "Business — Intellectual Property." There can be no assurance that our patented and patent-pending technologies will provide us with a competitive advantage, that we will be able to develop or acquire additional technology that is patentable, or that third parties will not develop and offer technologies which are similar to ours. Moreover, we can provide no assurance that confidentiality agreements with our employees, consultants and other parties, agreements to protect trade secrets or similar agreements intended to protect unpatented technology or prevent unauthorized use, disclosure, or misappropriation will not be breached by those third parties. IP litigation is extremely expensive and time-consuming, and it is often difficult to predict the outcome of such litigation. A failure by us to protect our IP, or a breach by third parties of agreements aimed at protecting our IP, could have a materially adverse effect on our business, results of operations, financial condition, and prospects.

Future protection for our proprietary rights is uncertain and may impact our ability to successfully compete in our industry.

The degree of future protection for our proprietary rights is uncertain. We cannot ensure that:

- We, or our licensors, were the first to make the inventions covered by each of our patents;
- We, or our licensors, were the first to file patent applications for these inventions;
- Others will not independently develop similar or alternative technologies or duplicate any of our technologies;
- Any of our pending patent applications will result in issued patents;
- Any of our issued patents or those of our licensors are valid and enforceable;

- Any patents issued to us or our collaborators will provide any competitive advantages or will not be challenged by third parties;
- We will develop additional proprietary technologies that are patentable;
- The patents of others will not have a material adverse effect on our business rights; or
- The measures we rely on to protect our IP underlying our products are adequate to prevent third parties from using, disclosing, or misappropriating that IP, all of which could harm our ability to compete in the market.

Our commercial success depends in part on our ability and the ability of our collaborators and licensors to avoid infringing patents and proprietary rights of third parties, which could expose us or our collaborators and licensors to litigation or commercially unfavorable licensing arrangements. Third parties may accuse us or collaborators and licensors of employing their proprietary technology without authorization in our products, or in the materials or processes used to make our products. Any legal action against our collaborators, licensors or those claiming damages and/or seeking to enjoin our commercial activities relating to the affected products, materials and processes could, in addition to subjecting us to potential liability for damages, require us or our collaborators and licensors to obtain a license to continue to utilize the affected materials or processes or to manufacture or market the affected products. We cannot predict whether we or our collaborators and licensors would prevail in any of these actions or whether any license required under any of these patents would be made available on commercially reasonable terms, if at all. If we were unable to obtain such a license, we and our collaborators and licensors may be unable to continue to utilize the affected materials or processes, or manufacture or market the affected products, or we may be obligated by a court to pay substantial royalties and/or other damages to the patent holder. Even if we were able to obtain such a license, the terms of such a license could substantially reduce the commercial value of the affected product or products and impair our prospects for profitability. Accordingly, we cannot predict whether, or to what extent, the commercial value of the affected product or products or our prospects for profitability may be harmed as a result of any of the liabilities discussed above. Furthermore, infringement and other IP claims, with or without merit, can be expensive and time-consuming to litigate and can divert management's attention from our core business. We and our collaborators and licensors may be unable to obtain and enforce IP rights to adequately protect our products and related IP, which could materially and adversely impact our business, results of operations, financial condition, or prospects.

The patent protection for our products may expire before we are able to maximize their commercial value which may subject us to increased competition and reduce or eliminate our opportunity to generate product revenue.

The patents for our commercialized products and products in development have varying expiration dates and, when these patents expire, we may be subject to increased competition and we may not be able to recover our development costs. For example, the material U.S. patents covering the formulations used in our Axoguard product line, which are held by Cook Biotech, have expired. Expiration of these patents could adversely affect our ability to successfully execute our business strategy to maximize the value of Axoguard products and could materially and adversely impact our business, results of operations, financial condition, and prospects.

Others may claim an ownership interest in our IP which could expose us to litigation and have a significant adverse effect on our prospects.

A third party may claim an ownership interest in one or more of our patents or other IP. A third party could bring legal actions against us claiming we infringed their patents or proprietary rights and seek monetary damages and/or enjoin clinical testing, manufacturing, and marketing of the affected product or products. While we believe we own the right, title, and interest in the patents for which we or our licensors have applied and our other IP (including that which is licensed from third parties) and is presently unaware of any claims or assertions by third parties with respect to our patents or IP, we cannot guarantee that a third party will not assert a claim or an interest in any of such patents or IP. If we become involved in any litigation, it could consume a substantial portion of our resources and cause a significant diversion of effort by our technical and management personnel. If any of these actions were successful, in addition to any potential liability for damages, we could be required to obtain a license to continue to manufacture or market the affected product, in which case we may be required to pay substantial royalties or grant cross-licenses to our patents. We cannot, however, assure that any such license will be available on acceptable terms, if at all. Ultimately, we could be prevented from commercializing a product or be forced to cease some aspect of our business operations as a result of claims of patent infringement or violation of other IP rights, which could have a material and adverse effect on our business, results of operations, financial condition, and prospects. Further, the outcome of IP litigation is subject to uncertainties that cannot be adequately quantified in advance, including the demeanor and credibility of witnesses and the identity of the adverse party. This is especially true in IP cases that may turn on the testimony of experts as to technical facts or the scope or meaning of patent claims upon which experts may reasonably disagree.

We depend on the maintenance of exclusive licenses.

We depend fundamentally on keeping and satisfying the terms of exclusive licenses of our nerve repair technologies from UFRF and UTA. Nonetheless, a disagreement between us and either licensor could have a negative impact on our ability to

effectively operate our business. In addition, we could learn that the technologies we have licensed do not perform as purported, are not efficacious, or are not the property of the licensor, any of which would have an immediate and negative impact on our business.

Our trademarks are valuable, and our business may be adversely affected if trademarks are not adequately protected.

In the U.S. and other countries, we currently hold trademark registrations and have trademark applications pending, any of which may be the subject of a governmental or third-party objection, which could prevent the maintenance or issuance of the same. As our products mature, our reliance on our trademarks to protect our brand, increase our name recognition and, in part, differentiate us from our competitors increases. As a result, if our trademark applications are not successful and if we are unable to prevent third parties from adopting, registering, or using trademarks, including trade dress, that infringe, dilute, or otherwise violate our trademark rights, our business, results of operations, financial condition, and prospects could be materially adversely affected.

Risks Related to Our Common Stock

An active trading market in our common stock may not be maintained.

The trading market in our common stock has been extremely volatile. The quotation of our common stock on The Nasdaq Capital Market does not assure that a meaningful, consistent, and liquid trading market will exist. We cannot predict whether an active market for our common stock will be maintained in the future. An absence of an active trading market could adversely affect our shareholders' ability to sell our common stock at current market prices in short time periods, or possibly at all. Additionally, market visibility for our common stock may be limited and such lack of visibility may have a depressive effect on the market price for our common stock. As of December 31, 2021, approximately 30.9% of our outstanding shares of common stock was held by our officers, directors, beneficial owners of 5% or more of our securities and their respective affiliates, which adversely affects the liquidity of the trading market for our common stock, in as much as federal securities laws restrict sales of our shares by these shareholders. If our affiliates continue to hold their shares of common stock, there will be limited trading volume in our common stock, which may make it more difficult for investors to sell their shares or increase the volatility of our stock price.

The price of our common stock could be highly volatile due to a number of factors, which could lead to losses by investors and costly securities litigation.

Our common stock is listed on The Nasdaq Capital Market under the symbol "AXGN." The stock market in general, and the market for medical technology companies in particular, have experienced and could in the future experience extreme volatility that has often been unrelated to the operating performance of particular companies. The trading price of our common stock has experienced substantial volatility and is likely to continue to be highly volatile in response to a number of factors including, without limitation, the following:

- Fluctuations in price and volume due to investor speculation, including short sales, social media speculation and other factors that may not be tied to our financial performance;
- Our performance in the execution of our business plan;
- Financial viability;
- Actual or anticipated variations in our operating results;
- Announcements of developments by us or our competitors;
- Market conditions in our industry;
- Announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- Adoption of new accounting standards affecting our industry;
- Additions or departures of key personnel;
- Introduction of new products by us or our competitors;
- Sales of our common stock or other securities in the open market;
- Regulatory developments in both the U.S. and foreign countries;
- Performance of products sold and advertised by licensees in the marketplace;
- Economic and other external factors;
- Period-to-period fluctuations in financial results; and
- Other events or factors, including the other factors described in this "Risk Factors" section, many of which are beyond our control.

The stock market is subject to significant price and volume fluctuations. Such fluctuations have and could expose us to securities class action litigation, which could adversely impact our business, results of operations, financial condition, and prospects.

We do not anticipate paying any cash dividends in the foreseeable future.

The operation and expansion of our business will continue to require funding. We do not anticipate that we will pay any cash dividends on our common stock for the foreseeable future. Any determination to pay dividends in the future will be at the discretion of our Board of Directors and will depend upon results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law, and other factors our board of directors deems relevant. Accordingly, if any investor purchases shares of common stock, realization of a gain on such investment will depend on the appreciation of the price of our common stock, which may never occur. Investors seeking cash dividends in the foreseeable future should not purchase our common stock.

Anti-takeover provisions in Minnesota law may deter acquisition bids for us that you might consider favorable.

We are governed by the provisions of Sections 302A.671, 302A.673 and 302A.675 of the Minnesota Business Corporation Act (the "MBCA"). These provisions may discourage a negotiated acquisition or unsolicited takeover of us and deprive our shareholders of an opportunity to sell their common stock at a premium over the market price.

In general, Section 302A.671 of the MBCA provides that a corporation's shares acquired in a control share acquisition have no voting rights unless voting rights are approved in a prescribed manner. A "control share acquisition" is a direct or indirect acquisition of beneficial ownership of shares that would, when added to all other shares beneficially owned by the acquiring person, entitle the acquiring person to have voting power of 20% or more in the election of directors.

In general, Section 302A.673 of the MBCA prohibits a public Minnesota corporation from engaging in a business combination with an interested shareholder for a period of four years after the date of the transaction in which the person became an interested shareholder, unless the business combination is approved in a prescribed manner. The term "business combination" includes mergers, asset sales, and other transactions resulting in a financial benefit to the interested shareholder. An "interested shareholder" is a person who is the beneficial owner, directly or indirectly, of 10% or more of a corporation's voting stock or who is an affiliate or associate of the corporation, and who, at any time within four years before the date in question, was the beneficial owner, directly or indirectly, of 10% or more of the corporation's voting stock. Section 302A.673 does not apply if a committee of our Board of Directors consisting of all of its disinterested directors (excluding current and former officers) approves the proposed transaction or the interested shareholder's acquisition of shares before the interested shareholder becomes an interested shareholder.

If a tender offer is made for our common stock, Section 302A.675 of the MBCA precludes the offeror from acquiring additional shares of stock (including in acquisitions pursuant to mergers, consolidations, or statutory share exchanges) within two years following the completion of the tender offer, unless shareholders selling their shares in the later acquisition are given the opportunity to sell their shares on terms that are substantially the same as those contained in the earlier tender offer. Section 302A.675 does not apply if a committee of our Board of Directors consisting of all of its disinterested directors (excluding its current and former officers) approves the proposed acquisition before any shares are acquired pursuant to the earlier tender offer.

Risks Related to Financing Our Business

Our credit facility and payment obligations under the Revenue Participation Agreement with Oberland Capital, contain operating and financial covenants that restrict our business and financing activities, require cash payments over an extended period of time and are subject to acceleration in specified circumstances, which may result in Oberland Capital taking possession and disposing of any collateral.

Our credit facility with Oberland Capital contains restrictions that limit our flexibility in operating our business. Under the terms of the credit facility, we must maintain, and cause our subsidiaries to maintain, certain covenants, including with respect to limitations on new indebtedness, restrictions on the payment of dividends and maintenance of revenue levels. Our credit facility is collateralized by all of our assets including, among other things, our intellectual property.

If we breach certain of our debt covenants and are unable to cure such breach, revert to the provided liquidity covenant or are not granted waivers in relation to such breach, it may constitute an event of default under the credit facility, giving Oberland Capital the right to require us to repay the then-outstanding debt immediately. If we are unable to pay the outstanding debt immediately, Oberland Capital could, among other things, foreclose on the collateral granted to them to collateralize such indebtedness. A breach of the covenants contained in the credit facility documents and the acceleration of its repayment

obligations by Oberland Capital could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In connection with the credit facility, we entered into a Revenue Participation Agreement ("RPA") with Oberland Capital. Pursuant to the RPA, we agreed to pay an additional quarterly royalty payment as a percentage of our net revenue, up to $70 million in any given fiscal year, subject to certain limitations set forth therein, during the period commencing on the later of (i) April 1, 2021 and (ii) the date of funding of a loan under the credit facility and ending on the date upon which all amounts owed under the Term Loan Agreement have been paid in full. Payments commenced on September 30, 2021 with the royalty structure resulting in approximately 1.0% per year of additional payments on the outstanding principal amount of the loans.

The credit facility and RPA could have important negative consequences to the holders of our securities. For example, a portion of our cash flow from operations will be needed to make payments to Oberland Capital and will not be available to fund future operations. Additionally, we may have increased vulnerability to adverse general economic and industry conditions. Payment requirements under the credit facility and RPA will increase our cash outflows. Additionally, the credit facility and RPA contain complex provisions which, if interpreted differently, could materially increase the amount of the payments due to Oberland Capital. Our future operating performance is subject to market conditions and business factors that are beyond our control. If our cash inflows and capital resources are insufficient to allow us to make required payments, we may have to reduce or delay capital expenditures, sell assets, or seek additional capital. If we raise funds by selling additional equity, such sale would result in dilution to our shareholders. There is no assurance that if we are required to secure funding, we can do so on terms acceptable to us, or at all.

We may need to raise additional funds to finance our future capital or operating needs, which could have adverse impacts on our business, results of operations and the interests of our shareholders.

We may need to seek to raise funds through the issuance of public or private debt or the sale of equity to achieve our business strategy. If we raise funds, this could dilute the interests of our shareholders. Moreover, the availability of additional capital, whether debt or equity from private capital sources (including banks) or the public capital markets, fluctuates as our financial condition and industry or market conditions in general change. There may be times when the private capital markets and the public debt or equity markets lack sufficient liquidity or when our securities cannot be sold at attractive prices, in which case we would not be able to access capital from these sources on favorable terms, if at all. We can give no assurance as to the terms or availability of additional capital.

General Risk Factors

Legal proceedings that we become involved in from time to time could adversely affect our business operations or financial condition.

We are or may become involved in various legal proceedings, including, but not limited to, proceedings related to patent, product liability and shareholder or securities class actions, among other lawsuits. For example, as described in more detail in "Legal Proceedings" included elsewhere in this Annual Report on Form 10-K, we are currently a defendant in several securities class action lawsuits.

Legal proceedings, if decided adversely to or settled by us, and not covered by insurance, could result in liability material to our financial condition, results of operations or cash flows. Likewise, regardless of outcome, legal proceedings could result in substantial costs and expenses, affect the availability or cost of some of our insurance coverage and significantly divert the attention of our management. There can be no assurance that we will be able to prevail in, or achieve a favorable settlement of, any pending or future legal proceedings to which we become subject. Even claims without merit could subject us to adverse publicity and require us to incur significant legal fees.

We may be subject to future product liability litigation which could be expensive, and our insurance coverage may not be adequate.

Although we are not currently subject to any product liability proceedings and have no provision for product liability disbursements, we may incur material liabilities relating to product liability claims in the future, including product liability claims arising out of the usage of our products. Although we currently carry product liability insurance in an amount we believe is consistent with industry averages, our insurance coverage and any provision we may maintain in the future for product related liabilities may not be adequate and our business, results of operations, financial conditions, and prospects could suffer material adverse consequences.

Loss of key members of management, who we need to succeed, could adversely affect our business.

Our future success depends on the continued efforts of the members of our executive management team. Competition for experienced management personnel in the healthcare industry is intense. If one or more of our executives or other key personnel are unable or unwilling to continue in their present positions, or if we are unable to attract and retain high quality executives or key personnel in the future, our business, results of operations, financial conditions, and prospects may be adversely affected.

Our business and financial performance could be adversely affected, directly or indirectly, by natural or man-made disasters or other similar events.

Neither the occurrence nor the potential impact of natural disasters (such as hurricanes and other natural disasters), civil insurrection and social unrest, public health crises, including COVID-19, nuclear disasters, terrorist activities, international hostilities or other criminal activities can be predicted. However, these occurrences could impact us directly as a result of damage to our facilities or by preventing us from conducting our business in the ordinary course, or indirectly as a result of their impact on our customers, suppliers, or other counterparties. We could also suffer adverse consequences to the extent that these disasters affect the financial markets or the economy in general or in any particular region.

Our ability to mitigate the adverse consequences of such occurrences is in part dependent on the quality of our resiliency planning, and our ability, if any, to anticipate the nature of any such event that occurs. The adverse impact of natural or man-made disasters also could be increased to the extent that there is a lack of preparedness on the part of national or regional emergency responders or on the part of other organizations and businesses that we deal with, particularly those that we depend upon but have no control over.

Our business, results of operations, financial condition, and prospects could be adversely affected, directly or indirectly, by the effects of an increased focus on environmental, social and governance issues.

Recently, shareholders have had an increased focus on environmental, social and governance ("ESG") issues, focusing on how companies are addressing climate change, diversity, and human rights, among other ESG-related issues. Our failure to comply with stakeholder expectations and standards regarding ESG issues, which are still evolving and can vary considerably, or the perception that we have not responded appropriately to ESG-related issues, could result in reputational harm, and could have an adverse effect on our business, results of operations, financial condition, and prospects.

Climate change could present immediate and long-term risks to our industry and our customers. The potential for increased severe weather events could have a material adverse effect on our operations and infrastructure or the operations and infrastructure of our suppliers. In addition, the effects of climate change could include long-term changes in temperature levels and water availability, increased energy costs, and increased supply costs impacted by those increasing energy costs. The cost of mitigating or responding to ESG issues could be significant; however, these costs are too uncertain to predict. In addition, the approaches taken by the U.S. or foreign governments to regulate ESG issues, which may include legislative or regulatory changes, could adversely impact our business, results of operations, financial condition, and prospects, and are too uncertain to predict.

Changes in U.S. trade policy, threats of international tariffs, and changes to the U.S. political landscape may adversely affect our business, results of operations, financial condition, and prospects.

Additionally, rising threats of international tariffs, including tariffs applied to goods traded between the U.S. and China, could materially and adversely affect our business, results of operations, financial condition, and prospects. Over the past several years, legislative and executive action from U.S. and foreign leaders has led to both threats of and the imposition of tariffs on certain materials and products. Over the past several years, the U.S. and China imposed tariffs or announced proposed tariffs to be applied in the future to certain of each other's exports. President Biden has chosen to maintain the tariffs implemented by President Trump on the medical technology industry. We cannot be certain, however, if the Biden administration will choose to have these tariffs remain in place or what impact, if any they may have on our business. Changes in political conditions in China and changes in the state of China-U.S. relations, including the current trade tensions, are difficult to predict and could adversely affect the operations or financial condition of the Company. We cannot predict the extent to which the U.S. or other countries will impose quotas, duties, tariffs, taxes or other similar restrictions upon the import or export of our products in the future, nor can we predict future trade policy or the terms of any renegotiated trade agreements and their impact on our business. The adoption and expansion of trade restrictions, the occurrence of a trade war, or other governmental action related to tariffs or trade agreements or policies has the potential to adversely impact demand for our products, our costs, our customers, our suppliers, and the U.S. economy, which in turn could have a material adverse effect on our business, results of operations, financial condition, and prospects.

The Biden administration continues to contemplate significant policy changes, including healthcare regulatory changes, which may impact our business, results of operation, financial condition, and prospects. These effects could be exacerbated by volatile economic, political and market conditions, such as social unrest, civil insurrection, and political action.

Our results of operations could be negatively affected by potential fluctuations in foreign currency exchange rates.

We are exposed to the effects of changes in foreign currency exchange rates. We are exposed to the risk of an increase or decrease in the value of the foreign currencies relative to the U.S. Dollar, which could increase the value of our expenses and decrease the value of our revenue when measured in U.S. Dollars. As a result, our results of operation may be influenced by the effects of future exchange rate fluctuations and such effects may have an adverse impact on our common stock price. Global markets and foreign currencies, including the Euro and the British Pound, were adversely impacted, as a result of Brexit and volatility in foreign currencies is expected to continue as a result of Brexit. Changes in the relative values of currencies occur regularly and, in some instances, could materially adversely affect our business, results of operations, financial condition or prospects.

Our failure to protect our technology systems and comply with data protection laws and regulations could lead to government enforcement actions and significant penalties against us, and adversely impact our business, results of operations, financial condition, and prospects.

We rely on information technology systems, including technology from third-party vendors, to process, transmit and store electronic information in our day-to-day operations. Similar to other companies, the size and complexity of our information technology systems makes them vulnerable to a cyber-attack, malicious intrusion, breakdown, destruction, loss of data privacy, or other significant disruption. Our information systems require an ongoing commitment of resources to maintain, protect and enhance existing systems and develop new systems to keep pace with continuing changes in information processing technology, evolving systems and regulatory standards and the increasing need to protect patient and customer information. Any failure by us to maintain or protect our information technology systems and data integrity could result in the unauthorized access to patient data and personally identifiable information, theft of intellectual property or other misappropriation of assets, or otherwise compromise our confidential or proprietary information and disrupt our operations. Cyber-attacks, intrusions, or other breaches could adversely impact our business, results of operations, financial condition, and prospects.

In the U.S., federal and state privacy and security laws require certain of our operations to protect the confidentiality of personal information, including patient medical records and other health information. Limiting and/or restricting the use of certain personal data and information, as well as added transparency obligations to data subjects is becoming an increasing focus as evidenced by the implementation of the California Consumer Privacy Act (“CCPA”) which became effective on January 1, 2020. In Europe, E.U. member states and other foreign jurisdictions, including Switzerland, have adopted data protection laws and regulations which impose significant compliance obligations. Moreover, the collection and use of personal health data in the E.U. is governed by the European Union General Data Protection Regulation (“GDPR”). The GDPR imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. The GDPR also imposes strict rules on the transfer of personal data out of the E.U. to the U.S., provides an enforcement authority and imposes large penalties for noncompliance, including the potential for fines of up to 4% of the annual global revenue of the noncompliant company. The recent implementation of the GDPR has increased our responsibility and liability in relation to personal data that we process, including in clinical trials, and we may in the future be required to put in place additional mechanisms to ensure compliance with the GDPR, which could divert management’s attention and increase our cost of doing business.

Compliance with applicable data privacy and security laws and regulations (together with applicable industry standards) may increase our costs of doing business. In this regard and in light of the CCPA’s implementation, we expect that there will be other proposed laws, regulations and industry standards relating to privacy and data protection in the U.S., the E.U. and other jurisdictions, and we cannot determine the impact such future laws, regulations and standards may have on our business results of operations, financial condition, and prospects.

We are dependent on internal information and telecommunications systems, and any failure of these systems, including system security breaches, data protection breaches or other cybersecurity attacks, may negatively impact our business and results of operations.

Cyber-attacks and other tactics designed to gain access to and exploit sensitive information by breaching mission critical systems of large organizations are constantly evolving and have been increasing in sophistication in recent years. High profile security breaches leading to unauthorized release of sensitive information have occurred with increasing frequency at a number of major U.S. companies, despite widespread recognition of the cyber-attack threat and improved data protection methods. While to date we have not experienced a significant data loss, significant compromise or any material financial losses related to

cybersecurity attacks, our systems, those of our customers, and those of our third-party service providers are under constant threat. Cybercrime, including phishing, social engineering, attempts to overload our servers with denial-of-service attacks, or similar disruptions from unauthorized access to our systems, could cause us critical data loss or the disclosure or use of personal or other confidential information. Outside parties may attempt to fraudulently induce employees to disclose personally identifiable information or other confidential information which could expose us to a risk of loss or misuse of this information.

We are dependent on internal information and telecommunications systems, and we are vulnerable to failure of these systems, including through system security breaches, data protection breaches or other cybersecurity attacks. If these events occur, the unauthorized disclosure, loss or unavailability of data and disruption to our business may have a material adverse effect on our reputation and harm our relationships with vendors and customers. Additionally, these events may lead to financial losses from remedial actions, or potential liability from fines, including in relation to noncompliance with the GDPR, as well as possible litigation and punitive damages. Failures of our internal information or telecommunications systems may prevent us from taking customer orders, shipping products and billing customers. Sales may also be impacted if our customers are unable to access our pricing and product availability information. The occurrence of any of these events could have a material adverse impact on our business and results of operations.

Our management has broad discretion in the use of our cash and cash equivalents and, despite management's efforts, cash and cash equivalents may be used in a manner that does not increase the value of shareholders' investments.

Our management has broad discretion in the use of our cash and cash equivalents, and investors must rely on the judgment of management regarding the use of such cash and cash equivalents. Management may invest our cash and cash equivalents in short-term or long-term, investment-grade, interest-bearing securities. These investments may not yield favorable returns to shareholders. If we do not invest or apply our cash and cash equivalents in ways that enhance shareholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

Our business and stock price may be adversely affected if our internal controls are not effective.

Section 404 of the Sarbanes-Oxley Act of 2002 requires that public companies conduct a comprehensive evaluation of their internal control over financial reporting. To comply with this statute, each year we are required to document and test our internal control over financial reporting and our management is required to assess and issue a report concerning it.

Although we have systems in place to strengthen our internal control over financial reporting, we cannot assure you that we will not discover material weaknesses in the future or that no material weakness will result from any difficulties, errors, delays, or disruptions while we implement and transition to new internal systems. The existence of one or more material weaknesses could result in errors in our financial statements, and substantial costs and resources may be required to rectify these or other internal control deficiencies. If we cannot produce reliable financial reports, investors could lose confidence in our reported financial information, the market price of our common stock could decline significantly, we may be unable to obtain additional financing to operate and expand our business and our business, results of operations, financial condition, and prospects could be adversely impacted.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We and Alachua Copeland Park Investments, LLC, a Florida limited liability company (as successor in interest to Ology Bioservices Holdings, LLC, a Delaware limited liability company, who was successor in interest to SNH Medical Office Properties Trust), are parties to a lease dated February 6, 2007, as amended (the "Primary Lease"), pursuant to which we lease an approximately nineteen thousand square foot corporate headquarters facility in the Progress Center at 13631 Progress Boulevard, Alachua, Florida. On July 13, 2021, we entered into a sixth amendment to the Primary Lease to extend the term of the Primary Lease to October 31, 2026.

We and Cousins Heights Union, LLC, a Georgia limited liability company (as successor in interest to Heights Union, LLC), are parties to a lease dated September 20, 2018, as amended, pursuant to which we lease approximately seventy-five thousand square feet of office space (the "Tampa Premises") in a one hundred and fifty thousand square foot office building in Tampa, Florida. On July 12, 2021, we amended our agreement with Heights Union, LLC to revise the commencement date of the lease to mean October 30, 2020 and the termination date of the lease to be October 31, 2034. We use the Tampa Premises for general office, medical laboratory, training, and meeting purposes.

We and Ja-Cole L.P. are parties to a lease dated April 21, 2015, as amended (the "Primary Lease"), and a lease dated October 1, 2020, pursuant to which we lease approximately 17,500 square feet in total (the “Burleson Facility”) in Burleson, Texas. On January 27, 2022, we amended the Primary Lease for 15,000 square feet of the Burleson Facility to revise the commencement date of the lease to mean May 1, 2022 and the termination date of the lease to be April 30, 2027. The Burleson Facility houses raw material storage and product distribution while allowing same day order fulfillment for both the east and west coasts of the U.S.

On August 6, 2015, we entered into the CTS Agreement with CTS, an FDA registered tissue establishment. Processing of the Avance Nerve Graft pursuant to the CTS Agreement began in February 2016. The CTS Agreement initially had a five-year term ending August 31, 2020. On February 22, 2021, the agreement was amended a seventh time to extend the term through December 31, 2023. Under the CTS Agreement, we pay CTS a facility fee for clean room/manufacturing, storage, and office space. CTS also provides services in support of our manufacturing such as routine sterilization of daily supplies, providing disposable supplies and microbial services, and office support.

On July 31, 2018, we purchased the APC Facility in Vandalia, Ohio, located near the CTS processing facility where Avance Nerve Graft is currently processed. The APC Facility, when and if operational, will be the new processing facility for Avance Nerve Graft to provide continued capacity for growth and to support the transition of Avance Nerve Graft from a 361 HCT/P tissue product to a biologic product. The APC Facility is comprised of a 107,000 square foot building on approximately 8.6 acres of land. Renovation of the APC Facility is ongoing until material processing is transitioned to the APC Facility in early 2023.

We believe that our facilities will be sufficient to operate our business for the next 12 months and that current lease obligations will not change materially.

ITEM 3. LEGAL PROCEEDINGS

Information required by this item is set forth in Note 14 - Commitments and Contingencies of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K and is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Axogen's common stock is traded on the Nasdaq Capital Market under the symbol "AXGN." On February 22, 2022, the last reported closing sale price of our common stock on the Nasdaq Capital Market was $7.26 per share.

Shareholders

As of February 22, 2022, we had 41,795,240 shares of common stock outstanding, and approximately 231 common shareholders of record, based upon information received from our stock transfer agent. However, this number does not include beneficial owners whose shares were held of record by nominees or broker dealers. We estimate that there are approximately 10,686 individual owners. Additional information called for by this item is incorporated herein by reference to the following sections of this Report: Note 11 - Stock-Based Incentive Plans of the Notes to Consolidated Financial Statements included in Item 8; and Part III, Item 12 "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters – Equity Compensation Plan Information".

Stock Performance Graph

The following graph compares the cumulative total shareholder return on our common stock for the period from December 31, 2016 to December 31, 2021 with (i) the Nasdaq Stock Market Biotechnology Index and (ii) the Nasdaq Stock Market Composite Index. The graph assumes an investment of $100 in our common stock and the respective indices for the period of December 31, 2016 to December 31, 2021. The comparisons set forth in the graph are provided pursuant to SEC rules and are not intended to forecast or be indicative of the future performance of our common stock or either of the included indices. The performance graph shall not be deemed incorporated by reference by any general statement incorporating by reference this annual report into any filing under the Securities Act of 1933, as amended, or the Exchange Act of 1934, as amended, except to the extent we specifically incorporate this information by reference and shall not otherwise be deemed filed under such acts.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

We did not repurchase any of our securities in the fourth quarter of 2021.

Recent Sales of Unregistered Securities

We had no sales of unregistered securities in 2021.

Securities Authorized for Issuance Under Equity Compensation Plans

See Part III, Item 12 “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.”

Dividends

We have never declared or paid and do not anticipate paying or declaring a cash dividend on our common stock. We intend to retain any earnings to finance the growth and development of our business. Our Board of Directors may declare dividends at its discretion.

ITEM 6. RESERVED

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following information should be read in conjunction with our consolidated financial statements and the notes thereto contained in Item 8 of this Form 10-K, "Forward-Looking Statements" contained in Part 1 of this Form 10-K, "Risk Factors" contained in Item 1A of this Form 10-K, and the other information appearing elsewhere in, or incorporated by reference into, this Form 10-K. Dollar amounts referenced in this Item 7 are in thousands, except per share amounts.

Overview

We are the leading company focused specifically on the science, development, and commercialization of technologies for peripheral nerve regeneration and repair. We are passionate about providing the opportunity to restore nerve function and quality of life for patients with peripheral nerve injuries. We provide innovative, clinically proven, and economically effective repair solutions for surgeons and healthcare providers. Peripheral nerves provide the pathways for both motor and sensory signals throughout the body. Every day, people suffer traumatic injuries or undergo surgical procedures that impact the function of their peripheral nerves. Physical damage to a peripheral nerve or the inability to properly reconnect peripheral nerves can result in the loss of muscle or organ function, the loss of sensory feeling, or the initiation of pain.

Our platform for peripheral nerve repair features a comprehensive portfolio of products, including Avance Nerve Graft, a biologically active off-the-shelf processed human nerve allograft for bridging severed peripheral nerves without the comorbidities associated with a second surgical site; Axoguard Nerve Connector, a porcine (pig) submucosa ECM coaptation aid for tensionless repair of severed peripheral nerves; Axoguard Nerve Protector, a porcine submucosa ECM product used to wrap and protect damaged peripheral nerves and reinforce the nerve reconstruction while preventing soft tissue attachments; Axoguard Nerve Cap, a porcine submucosa ECM product used to protect a peripheral nerve end and separate the nerve from the surrounding environment to reduce the development of symptomatic or painful neuroma; Avive Soft Tissue Membrane, a processed human umbilical cord intended for surgical use as a resorbable soft tissue conduit; and Axotouch Two-Point Discriminator, used to measure the innervation density of any surface area of the skin. Our portfolio of products is available in the U.S., Canada, Germany, the UK, Spain, South Korea, and several other countries.

As previously announced, we suspended the market availability of Avive Soft Tissue Membrane ("Avive") effective June 1, 2021 and we continue discussions with the FDA to determine the appropriate regulatory classification and requirements for Avive. The suspension was not based on any safety or product issues or concerns with Avive. We seek to return Avive to the market, although we are unable to estimate the timeframe or provide any assurances that a return to the market will be achievable. Avive has historically represented approximately 5% of our revenues through the second quarter of 2021, and no Avive revenue was recorded in the third and fourth quarters of 2021.

Revenue from the distribution of our nerve repair products, Avance Nerve Graft, Axoguard Nerve Connector, Axoguard Nerve Protector, and Axoguard Nerve Cap, in the U.S. is the main contributor to our total reported sales and has been the key component of our growth to date.

We have experienced that surgeons initially are cautious adopters for peripheral nerve repair products. Surgeons typically start with a few cases and then wait and see the results of these initial cases. Active accounts are usually past this wait period and have developed some level of product reorder. These active accounts have typically gone through the committee approval process, have at least one surgeon who has converted a portion of his or her treatment algorithms of peripheral nerve repair to our portfolio and have ordered our products at least six times in the last twelve months. As of December 31, 2021, we had 951 active accounts, an increase of 6.5% from 893 one year ago. Active accounts are approximately 85% of our revenue. The top 10% of these active accounts continue to represent approximately 35% of our revenue. As our business continues to grow, we have transitioned to reporting a new account metric that we believe demonstrates the strength of adoption and potential revenue growth in accounts that have developed a more consistent use of our products in their nerve repair algorithm. We refer to these as core accounts which we define as accounts that have purchased at least $100,000 in the past 12 months. As of December 31, 2021, we had 294 core accounts, an increase of 9.3% from 269 one year ago. These core accounts represented approximately 60% of our revenue in 2021, which has remained consistent over the past two years.

COVID-19 Impact

In March 2020, the World Health Organization declared the outbreak of COVID-19 a pandemic. The global impact of COVID-19 has had a negative effect on the global economy, disrupting the financial markets and significantly impacting the medical industry. In response to COVID-19, our top priority has been the health and safety of those we serve, including healthcare professionals and their patients, as well as our employees, communities, and suppliers. We ensured employee compliance with state and local mandates as well as implemented certain cost mitigation initiatives in 2020 such as a reduction

in pay levels, temporary suspension of tissue processing and deferral of certain projects, among other efforts. As economic activity began to normalize, we lifted these cost mitigation initiatives.

Although COVID-19 had a significant impact on our revenue growth in 2020, we were able to increase revenue in 2021 as compared to 2020. The rapid development and fluidity of the situation surrounding COVID-19 prevent any prediction as to the ultimate impact COVID-19 will have on our business as new variants continue to spread, causing global supply chain disruptions, labor shortages, and inflationary conditions.

Results of Operations

Comparison of the Years Ended December 31, 2021 and 2020

The following table sets forth, for the periods indicated, our results of operations expressed as dollar amounts and as percentages of total revenue:

	Year Ended December 31,			
	2021		2020	
	Amount	% of Revenue	Amount	% of Revenue
	(dollars in thousands)			
Revenues	$ 127,358	100.0 %	$ 112,300	100.0 %
Cost of goods sold	22,931	18.0	21,581	19.2
Gross profit	104,427	82.0	90,719	80.8
Costs and expenses:				
Sales and marketing	73,328	57.6	69,659	62.0
Research and development	24,177	19.0	17,846	15.9
General and administrative	32,338	25.4	26,396	23.5
Total costs and expenses	129,843	102.0	113,901	101.4
Loss from operations	(25,416)	(20.0)	(23,182)	(20.6)
Other (expense) income:				
Investment income	93	0.1	605	0.5
Interest expense	(1,356)	(1.1)	(1,054)	(0.9)
Change in fair value of derivatives	(28)	—	(117)	(0.1)
Other expense	(278)	(0.2)	(38)	—
Total other (expense) income, net	(1,569)	(1.2)	(604)	(0.5)
Net loss	$ (26,985)	(21.2)%	$ (23,786)	(21.1)%

Revenues

Revenues for the year ended December 31, 2021 increased $15,058, or 13.4%, to $127,358 as compared to $112,300 for the year ended December 31, 2020. In 2021, our revenues continued to recover from the initial phases of the COVID-19 pandemic that began in 2020, however revenues in the second half of 2021 were negatively impacted by lower procedure volume due to the impact of COVID-19 variants and related hospital staffing challenges. Revenue growth was driven by an increase in unit volume of approximately 8%, as well as the net impact of changes in prices and product mix of approximately 5%. The unit volume increase was attributed to growth in our core and active accounts. As of December 31, 2021, we had 951 active accounts, an increase of 6.5% from 893 one year ago and we had 294 core accounts, an increase of 9.3% from 269 one year ago.

Gross Profit

Gross profit for the year ended December 31, 2021 increased $13,708, or 15.1%, to $104,427 as compared to $90,719 for the year ended December 31, 2020. Gross margin increased to 82.0% for the year ended December 31, 2021 as compared to 80.8% for the year ended December 31, 2020. In 2021, we recorded a $1,429 charge reflecting the write-down of inventory and related production costs due to the suspension of Avive, which resulted in a 1.1% decrease in our gross margin. Gross margin was negatively impacted during 2020 due to lower revenue, idle facility charges and other increased period costs of

approximately $2,000 in the second and third quarters resulting from our temporary suspension of tissue processing, as well as approximately $2,242 of inventory write-downs.

Costs and Expenses

Total costs and expenses increased $15,942, or 14.0%, to $129,843 for the year ended December 31, 2021 as compared to $113,901 for the year ended December 31, 2020. The increase in total costs and expenses over the prior year reflects a return to more normalized spending levels following the steep reduction in spend as a result of our cost mitigation initiatives enacted at the beginning of the COVID-19 pandemic, including increases of $4,129 in professional and consulting fees, $3,127 in occupancy-related expenses primarily attributable to our new lab and office facility in Tampa, $2,700 in general corporate expenses, $2,555 in marketing programs and travel as restrictions were lifted and access to hospitals and surgeons resumed and $1,462 in employee compensation where increases in salaries and non-cash stock compensation were partially offset by decreases in bonus' and commissions. As a percentage of total revenues, total costs and expenses increased slightly to 102.0% for the year ended December 31, 2021 as compared to 101.4% for the year ended December 31, 2020.

Sales and marketing expenses increased $3,669, or 5.3%, to $73,328 for the year ended December 31, 2021 as compared to $69,659 for the year ended December 31, 2020. This increase was primarily due to an increase of $2,459 in marketing programs and travel as restrictions were lifted and access to hospitals and surgeons resumed and an increase of $1,353 in occupancy-related expenses, partially offset by lower employee compensation of $667 primarily due to lower commissions. As a percentage of total revenues, sales and marketing expenses were 57.6% for the year ended December 31, 2021 as compared to 62.0% for the year ended December 31, 2020. We expect sales and marketing expenses will increase as pandemic-related restrictions in hospital access and travel normalize.

Research and development expenses increased $6,331, or 35.5%, to $24,177 for the year ended December 31, 2021 as compared to $17,846 for the year ended December 31, 2020. Product development expenses represented approximately 74% of total research and development expenses in the year ended December 31, 2021 as compared to 50% in the prior year. The increase in product development expenses reflect increased spending in specific programs, including our efforts related to the BLA for Avance Nerve Graft and a next generation Avance product. It is expected that costs associated with the BLA will continue to increase as we continue to invest in completing the license application. Additionally, we continue to conduct development efforts focused on both new peripheral nerve products and new peripheral nerve applications for our existing products. We pursue research grants to support research and early product development. Clinical trial expenses represented approximately 26% of research and development expenses in the year ended December 31, 2021 as compared to 50% in the prior year. As a percentage of total revenues, research and development expenses increased to 19.0% for the year ended December 31, 2021 as compared to 15.9% for the year ended December 31, 2020.

General and administrative expenses increased $5,942, or 22.5%, to $32,338 for the year ended December 31, 2021 as compared to $26,396 for the year ended December 31, 2020. The increase was primarily due to higher professional and consulting fees of $3,120, higher general corporate expenses of $2,057, and higher occupancy-related expenses of $585. Increases in salaries and non-cash stock compensation were partially offset by a decrease in incentive compensation. As a percentage of total revenues, general and administrative expenses increased to 25.4% for the year ended December 31, 2021 as compared to 23.5% for the year ended December 31, 2020.

Other Expense and Income

Total other expense increased $965, or 159.8%, to $1,569 for the year ended December 31, 2021 as compared to $604 for the year ended December 31, 2020. The increase in total other expense was primarily due to a decrease of $512 in investment income due to lower investment balances and falling yields and an increase of $302 in interest expense due to our Oberland debt facility, which began on June 30, 2020, with an additional borrowing on June 30, 2021. We capitalized interest of $4,277 and $997 during 2021 and 2020, respectively.

Income Taxes

We had no income tax expense or benefit for the years ended December 31, 2021 and 2020 due to the incurrence of net operating losses in both years, the benefits of which have been fully reserved. We do not believe that there are any additional tax expenses or benefits currently available.

Comparison of the Years Ended December 31, 2020 and 2019

The following table sets forth, for the periods indicated, our results of operations expressed as dollar amounts and as percentages of total revenue:

	Year Ended December 31,			
	2020		2019	
	Amount	% of Revenue	Amount	% of Revenue
	(dollars in thousands)			
Revenues	$ 112,300	100.0 %	$ 106,712	100.0 %
Cost of goods sold	21,581	19.2	17,349	16.3
Gross profit	90,719	80.8	89,363	83.7
Costs and expenses:				
Sales and marketing	69,659	62.0	71,950	67.4
Research and development	17,846	15.9	17,514	16.4
General and administrative	26,396	23.5	31,305	29.3
Total costs and expenses	113,901	101.4	120,769	113.1
Loss from operations	(23,182)	(20.6)	(31,406)	(29.4)
Other (expense) income:				
Investment income	605	0.5	2,364	2.1
Interest expense	(1,054)	(0.9)	(40)	—
Change in fair value of derivatives	(117)	(0.1)	—	—
Other expense	(38)	—	(53)	—
Total other (expense) income, net	(604)	(0.5)	2,271	2.1
Net loss	$ (23,786)	(21.1)%	$ (29,135)	(27.3)%

Revenues

Revenues for the year ended December 31, 2020 increased $5,588, or 5.2%, to $112,300 as compared to $106,712 for the year ended December 31, 2019. During the on-set of COVID-19, certain hospitals and surgery centers discontinued elective surgeries and our sales force was not allowed to enter the hospitals. This significantly reduced our revenue growth. Once elective surgeries resumed, hospitals allowed our sales representatives to begin entering their facilities once again. As a result, we began to experience a return in revenues as these facilities began scheduling surgeries, although restrictions continued to limit our access in certain accounts as local communities addressed resurgences of COVID-19. Revenue growth was driven by an increase in unit volume of approximately 2%, as well as the net impact of changes in prices and product mix of approximately 3%. The growth in unit volume was primarily attributed to unit growth in our active accounts. In the fourth quarter of 2020, we had 893 active accounts, an increase of 12% from 797 at the end of 2019.

Gross Profit

Gross profit for the year ended December 31, 2020 increased $1,356, or 1.5%, to $90,719 as compared to $89,363 for the year ended December 31, 2019. Gross profit increased during 2020 due to an increase in revenue, offset by the impact of COVID-19. Gross profit margin in 2020 decreased to 80.8% as compared to 83.7% in 2019. Gross margin was negatively impacted during 2020 due to idle facility charges and other increased period costs of approximately $2,000 in the second and third quarters resulting from our temporary suspension of tissue processing, as well as approximately $2,242 of inventory write-downs.

Costs and Expenses

Total costs and expenses decreased $6,868, or 5.7%, to $113,901 for the year ended December 31, 2020 as compared to $120,769 for the year ended December 31, 2019. The decrease in operating expenses was primarily attributable to the impact of our lower travel and in-person surgeon education programs of $9,807 as a result of restrictions associated with COVID-19, as well as decreased litigation expenses of $2,467 as a result of reaching deductible limits with respect to certain litigation matters. These decreases were slightly offset by higher sales commissions and other compensation-related costs of $5,519. As a percentage of revenues, total costs and expenses decreased to 101.4% in 2020 compared to 113.1% in 2019.

Sales and marketing expenses decreased $2,291, or 3.2%, to $69,659 for the year ended December 31, 2020 as compared to $71,950 for the year ended December 31, 2019. This decrease was driven by lower travel, surgeon education and conference expenses as we cancelled in-person education programs, and experienced restrictions in hospital access and travel directly related to the impact of COVID-19. The decrease in expenses was slightly offset by salaries and benefits from increased sales commissions. As a percentage of revenues, sales and marketing expenses were 62.0% for the year ended December 31, 2020 compared to 67.4% for the year ended December 31, 2019.

General and administrative expenses decreased $4,909, or 15.7%, to $26,396 for the year ended December 31, 2020 as compared to $31,305 for the year ended December 31, 2019. The decrease was primarily due to lower litigation expenses as a result of reaching deductible limits with respect to certain litigation matters as well as a decrease in stock compensation. As a percentage of revenues, general and administrative expenses decreased to 23.5% for the year ended December 31, 2020 compared to 29.3% for the year ended December 31, 2019.

Research and development expenses slightly increased to $17,846 for the year ended December 31, 2020 as compared to $17,514 for the year ended December 31, 2019. Research and development costs include our product development efforts as well as non-clinical spend in support of our BLA for Avance Nerve Graft, and clinical trials. Product development expenses represented approximately 50% of total research and development expense in the year ended December 31, 2020 as compared to 52% in the prior year period. Clinical trial expenses represented approximately 50% of research and development expense in the year ended December 31, 2020 as compared to 48% in the prior year period. COVID-19 negatively impacted certain of our clinical study programs as certain study sites restricted access and reallocated their resources to focus on COVID-19 related care. Included within clinical trial expenses are clinical trial costs associated with the BLA. Our continued efforts related to the BLA drove the slight increase in research and development expenses year over year. As a percentage of revenues, research and development expenses decreased to 15.9% in 2020 from 16.4% in 2019.

Other Expense and Income

Interest expense increased to $1,054 for the year ended December 31, 2020 as compared to $40 for the year ended December 31, 2019. The change is primarily due to interest expense from our Oberland debt facility, which began on June 30, 2020. We recognized total interest charges of $1,941 in connection with the Oberland debt facility in the current year, but $997 of this interest was capitalized to the construction costs of the APC Facility. For the year ended December 31, 2020, we recognized $605 of investment income from our asset management and cash investment sweep accounts as compared to $2,364 for the year ended December 31, 2019. The decrease is primarily due to lower investment income from our asset management program as a result of lower interest rates from COVID-19 and as we lowered investment balances and increased cash reserves.

Income Taxes

We had no income tax expense or benefit for 2020 or 2019 due to the incurrence of net operating losses in both years, the benefits of which have been fully reserved. We do not believe that there are any additional tax expenses or benefits currently available.

Liquidity and Capital Resources

General

As of December 31, 2021, our principal sources of liquidity were our cash and cash equivalents and investments totaling $84,086. Our cash equivalents are comprised of a money market mutual fund and our investments are comprised of short-term commercial paper and U.S. Treasuries. Our cash and cash equivalents and investments decreased $19,880 from $103,966 at December 31, 2020 primarily as a result of renovating the APC Facility and increasing the inventory level, partially offset by cash flow from employee stock option exercises and ESPP stock purchases and sales of investments.

We had working capital of $102,756 and a current ratio of 5.2x at December 31, 2021, compared to working capital of $122,420 and a current ratio of 6.4x at December 31, 2020. The decrease in working capital at December 31, 2021 as compared to December 31, 2020, was primarily due to the decrease in cash and cash equivalents used to renovate the APC Facility, which is a non-current asset, and the year over year improvement in the cash collections cycle, as accounts receivable increased 2.2% with revenue growth of 13.4%. The decrease in the current ratio at December 31, 2021, as compared to December 31, 2020, was primarily due to a decrease in cash and cash equivalents.

As of December 31, 2021, total current liabilities were $24,293. Based on current estimates, we believe that our existing cash and cash equivalents and investments, as well as cash provided by sales of our products will allow us to fund our operations through at least the next 12 months. Our future capital requirements depend on a number of factors including, without limitation, our growth rate, the timing and extent of spending to support development efforts, the expansion of sales and marketing activities, the acquisition and/or development of new products and the cost of products. We could face increasing capital needs. Such capital needs could be substantial depending on the extent to which we are unable to increase revenue.

If we need additional capital in the future, we may raise additional funds through public or private equity offerings, debt financings or from other sources. The sale of additional equity would result in dilution to our shareholders. There is no assurance that we will be able to secure funding on terms acceptable to us, or at all. The increasing need for capital could also make it more difficult to obtain funding through either equity or debt. Should additional capital not become available to us as needed, we may be required to take certain actions, such as slowing sales and marketing expansion, delaying regulatory approvals, or reducing headcount.

Cash Flow Information

The following table presents a summary of our cash flows from operating, investing and financing activities:

	Year Ended December 31,		
(in thousands)	**2021**	**2020**	**2019**
Net cash (used in) provided by:			
Operating activities	$ (13,405)	$ (9,626)	$ (19,872)
Investing activities	(23,649)	(16,963)	27,271
Financing activities	20,452	40,474	4,031
Net (decrease) increase in cash and cash equivalents	$ (16,602)	$ 13,885	$ 11,430

Net Cash Used in Operating Activities

Operating activities for the year ended December 31, 2021 used $13,405 of cash, as compared to $9,626 and $19,872 for the years ended December 31, 2020 and 2019, respectively. The increase in operating cash outflows in 2021 was primarily due to unfavorable changes in working capital, as well as an increase in the net loss year over year. Net cash used in operations decreased in 2020 as compared to 2019 due primarily to favorable changes in working capital as well as a decrease in the net loss year over year.

Net Cash Used in/Provided by Investing Activities

Investing activities for the year ended December 31, 2021 used $23,649 of cash, as compared to $16,963 for the year ended December 31, 2020 and providing $27,271 of cash for the year ended December 31, 2019. The increase in investing cash outflows in the current year as compared to 2020 is principally attributable to higher levels of capital expenditures related to the renovation of the APC Facility. The increase in investing cash outflows in 2020 as compared to 2019 primarily related to

capital expenditures for the APC Facility and our Tampa facility, partially offset by higher proceeds from the sale of investments in the prior year.

Net Cash Provided by Financing Activities

Financing activities for the year ended December 31, 2021 provided $20,452 of cash as compared to $40,474 and $4,031 for the years ended December 31, 2020 and 2019, respectively. The decrease in financing cash inflows in the current year as compared to 2020 was primarily due to the drawdown of the $15,000 second tranche of the long-term debt facility in the second quarter of 2021, as compared to a $35,000 drawdown of the first tranche in the second quarter of 2020, as well as $3,500 of proceeds from the exercise of the stock options related to the long-term debt in 2020. The 2020 improvement over 2019 was primarily the result of long-term borrowings of $35,000 as well as $3,500 of proceeds from the exercise of the stock options related to the long-term debt, see "Note 10 - Long-Term Debt, Net of Financing Fees in the Notes to the Consolidated Financial Statements" for further discussion. Proceeds from the exercise of stock options and ESPP stock purchases, excluding the stock options exercised related to the long-term debt, provided $5,467, $3,300, and $4,002 of cash for the years ended December 31, 2021, 2020, and 2019, respectively.

Operating Cash Requirements

On July 9, 2019, we entered into a Standard Form of Agreement Between Owner and Design-Builder (the “Design-Build Agreement”) with CRB Builders, L.L.C., a Missouri limited liability company (“CRB”), pursuant to which CRB will renovate and retrofit the APC Facility (See "Note 14 - Commitments and Contingencies in the Notes to the Consolidated Financial Statements"). The estimated cost pursuant to the Design-Build Agreement was $29,300. Additional costs associated with the renovation, validation and certification of the APC Facility are estimated to be $20,900, plus projected capitalized interest of $11,300. We have recorded $40,544 to date related to this project, including capitalized interest of $5,274. We anticipate spending $19,300, including projected capitalized interest of $6,100 in 2022 and an additional $1,700 in 2023. We anticipate that this building will be completed in early 2022, followed by a year-long process to validate and certify the facility by early 2023. We anticipate commencing tissue processing in the facility upon completion of the validation and certification process.

Credit Facilities

On June 30, 2020, we entered into a seven-year financing agreement with Oberland Capital (the “Oberland Facility”) and obtained the first tranche of $35,000 at closing. On June 30, 2021, we drew down the second tranche of $15,000. The financing costs for this facility were $642 and were recorded as a contra liability to the debt facility. As of December 31, 2021, we have paid all of the financing costs.

The Oberland Facility requires quarterly interest payments for seven years. Interest is calculated as 7.5% plus the greater of the London Interbank Offered Rate ("LIBOR") or 2.0% (9.5% as of December 31, 2021). Each tranche of the Oberland Facility has a term of seven years from the date of issuance (with the first tranche issued on June 30, 2020, maturing on June 30, 2027 and the second tranche issued on June 30, 2021, maturing on June 30, 2028). In connection with the Oberland Facility, we entered into a revenue participation agreement with Oberland Capital, which provides that, among other things, a quarterly royalty payment as a percentage of our net revenues, up to $70 million in any given year, subject to certain limitations set forth therein, during the period commencing on the later of (i) April 1, 2021 and (ii) the date of funding of a tranche of the loan, and ending on the date upon which all amounts owed under the Oberland Facility have been paid in full (the “Revenue Participation Agreement”). Royalty payments commenced on September 30, 2021. This royalty structure results in approximately 1.0% per year of additional interest payments on the outstanding loan amount. Upon maturity or upon such earlier repayment of the Oberland Facility, we will repay the principal balance and provide a make-whole payment calculated to generate an internal rate of return to Oberland Capital equal to 11.5%, less the total of all quarterly interest and royalty payments previously paid to Oberland Capital.

Contractual Obligations and Commitments

See "Note 14 - Commitments and Contingencies in the Notes to the Consolidated Financial Statements" for further information.

Critical Accounting Policies and Estimates

The discussion and analysis of our 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 U.S. (“US GAAP”). The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and

reported amount of expenses during the period reported. Management bases its estimates and judgments on historical experience, observance of trends in the industry, information provided by outside sources and on various other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. We have described the critical accounting policies regarding inventory, derivative instruments and stock-based compensation and our significant accounting policies in Note 3 - Summary of Significant Accounting Policies in the Notes to the Consolidated Financial Statements included in this Form 10-K.

Recent Accounting Pronouncements

See "Note 3 - Summary of Significant Accounting Policies in the Notes to the Consolidated Financial Statements" for further information.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

We are subject to market risk from exposure to changes in interest rates based upon our investing and cash management activities. For our cash equivalents and investments, a change in interest rates affects the amount of interest income that can be earned.

We have not entered into derivative transactions related to cash and cash equivalents. We do not expect changes in interest rates to have a material adverse effect on our income or our cash flows in 2022. However, we give no assurance that interest rates will not significantly change in the future.

We also have interest rate exposure as a result of the Oberland Facility. As of December 31, 2021, the outstanding principal amount of our loans under the Oberland Facility was $50,000. Interest on our loans under the Oberland Facility is payable quarterly during the term of the loans and is calculated as 7.5% plus the greater of LIBOR or 2.0% (9.5% as of December 31, 2021); provided that the interest rate shall never be less than 9.5%. Changes in the LIBOR rate may therefore affect our interest expense associated with the loans. An increase of 100 basis points in interest rates would increase expense by approximately $500 annually based on the amounts currently outstanding and would not materially affect our results of operations.

Credit Risk

Financial instruments that potentially subject us to credit risk consist of cash and cash equivalent balances, investments in commercial paper and accounts receivable. Certain of our cash and cash equivalents balances exceed Federal Deposit Insurance Corporation ("FDIC") insured limits or are invested in money market accounts with investment banks that are not FDIC-insured. We place our cash and cash equivalents in what we believe to be credit-worthy financial institutions. As of December 31, 2021, $32,238 of the cash and cash equivalents balance was in excess of FDIC limits.

We invest our cash primarily in commercial paper, money market accounts, and U.S. government securities. Although we believe our cash is invested in a conservative manner, with cash preservation being the primary investment objective, the value of the commercial paper held will fluctuate with changes in the financial markets, including, among other things, changes in interest rates, credit quality and general volatility. This risk is managed by investing in high quality investment grade commercial paper with short-term maturities.

With respect to accounts receivable, we perform credit evaluations of our customers and do not require collateral. There have been no material losses on accounts receivable. Concentrations of credit risk with respect to accounts receivable are limited because a large number of geographically diverse customers make up the Company’s customer base, thus spreading the trade credit risk. The Company also controls credit risk through credit approvals and monitoring procedures.

Foreign Currency Exchange Risk

The value of the U.S. dollar compared to the foreign currencies of the countries where we distribute our products has little to no effect on our financial results. In our international markets, we distribute our products and services to independent distributors who, in turn, distribute and market to medical clinics. The revenue from the distribution of our products in our international markets through independent distributors is denominated in U.S. dollars. As a result, the Company has minimal exposure related to foreign exchange rate fluctuations. Our portfolio of products is available in Canada, Germany, the UK, Spain, South Korea, and several other countries.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

CONTENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Axogen, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Axogen, Inc and subsidiaries (the "Company") as of December 31, 2021 and 2020, the related consolidated statements of operations, shareholders' equity, and cash flows, for each of the three years in the period ended December 31, 2021, and the related notes and the schedule listed in the Index at Item 15(a)(2) (collectively referred to as the "financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

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

Basis for Opinions

The Company's management is responsible for these financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on these financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the financial statements included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures to respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the 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 financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the 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 financial statements and (2) involved especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Inventory – Valuation Associated with Excess and Obsolete (E&O) Inventory — Refer to Notes 3 and 4 to the financial statements

Critical Audit Matter Description

Inventory is comprised of unprocessed tissue, work-in-process, Avance Nerve Graft, Axoguard Nerve Connector, Axoguard Nerve Protector, Axoguard Nerve Cap, Axotouch Two-Point Discriminator and supplies and are valued at the lower of cost or net realizable value. The Company monitors the shelf life of its products and historical expiration and spoilage trends, and writes down inventory based on the estimated amount of inventory that will not be distributed before expiration or spoilage. To estimate the amount of inventory that will expire prior to being distributed, the Company reviews inventory quantities on hand, historical and projected distribution levels, and historical expiration trends. The Company's calculation of the amount of inventory that will expire prior to distribution has two components: 1) a demand or consumption based component that compares projected distribution to inventory quantities on hand; and 2) an expiring inventory component that assesses the risk related to inventory that is near expiration by analyzing historical expiration trends to project inventory that will expire prior to being distributed. The Company's model assumes that inventory will be distributed on a first-in-first-out basis. Due to the nature of the inventory (surgical implants with expiration dates) and the fact that a significant portion of the Company's inventory is at medical facility consignment locations, estimating the amount of inventory that will expire and the amount of inventory that should be written down involves significant judgments and estimates.
Given the significant judgments associated with evaluating the valuation of E&O inventory, auditing the reasonableness of management's estimates and assumptions involved especially subjective judgment and an increased extent of effort.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the Company's valuation of E&O inventory included the following, among others:

- We tested the design, implementation and operating effectiveness of controls over the E&O inventory valuation. The controls we tested included those over the calculation and accuracy and completeness of underlying data used in the calculation.
- We performed procedures to evaluate management's ability to accurately forecast by comparing the historical expiring inventory estimates to subsequent inventory destructions and expirations.
- We obtained the Company's E&O calculation and tested the mathematical accuracy.
- We assessed the reasonableness of the assumptions used in the E&O calculation by developing an independent expectation and comparing our independent expectation to the results of the Company's calculation.
- We tested the accuracy and completeness of the underlying data used in the calculation of the Company's expiring inventory model.
- We made inquiries of the Company's employees outside of the accounting department and evaluated other areas of the audit to identify business, product, or industry changes that may impact the inputs in the inventory valuation calculation.

/s/ Deloitte & Touche LLP

Miami, Florida
February 25, 2022
We have served as the Company's auditor since 2018.

AXOGEN, INC.
CONSOLIDATED BALANCE SHEETS
December 31, 2021 and 2020
(In Thousands, Except Share and Per Share Amounts)

	2021	2020
Assets		
Current assets:		
Cash and cash equivalents	$ 32,756	$ 48,767
Restricted cash	6,251	6,842
Investments	51,330	55,199
Accounts receivable, net of allowance for doubtful accounts of $276 and $416, respectively	18,158	17,618
Inventory	16,693	12,529
Prepaid expenses and other	1,861	4,296
Total current assets	127,049	145,251
Property and equipment, net	62,881	38,398
Operating lease right-of-use assets	15,193	15,614
Finance lease right-of-use assets	42	64
Intangible assets, net	2,859	2,054
Total assets	$ 208,024	$ 201,381
Liabilities and shareholders' equity		
Current liabilities:		
Accounts payable and accrued expenses	$ 22,459	$ 21,968
Current maturities of long-term lease obligations	1,834	863
Total current liabilities	24,293	22,831
Long-term debt, net of financing fees	44,821	32,027
Long-term lease obligations	20,798	20,874
Debt derivative liabilities	5,562	2,497
Other long-term liabilities	—	3
Total liabilities	95,474	78,232
Commitments and contingencies - see Note 14		
Shareholders' equity:		
Common stock, $0.01 par value per share; 100,000,000 shares authorized; 41,736,950 and 40,618,766 shares issued and outstanding	417	406
Additional paid-in capital	342,765	326,390
Accumulated deficit	(230,632)	(203,647)
Total shareholders' equity	112,550	123,149
Total liabilities and shareholders' equity	$ 208,024	$ 201,381

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

AXOGEN, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
Years ended December 31, 2021, 2020 and 2019
(In Thousands, Except Share and Per Share Amounts)

	2021	2020	2019
Revenues	$ 127,358	$ 112,300	$ 106,712
Cost of goods sold	22,931	21,581	17,349
Gross profit	104,427	90,719	89,363
Costs and expenses:			
Sales and marketing	73,328	69,659	71,950
Research and development	24,177	17,846	17,514
General and administrative	32,338	26,396	31,305
Total costs and expenses	129,843	113,901	120,769
Loss from operations	(25,416)	(23,182)	(31,406)
Other (expense) income:			
Investment income	93	605	2,364
Interest expense	(1,356)	(1,054)	(40)
Change in fair value of derivatives	(28)	(117)	—
Other expense	(278)	(38)	(53)
Total other (expense) income, net	(1,569)	(604)	2,271
Net loss	$ (26,985)	$ (23,786)	$ (29,135)
Weighted average common shares outstanding — basic and diluted	41,215	39,967	39,235
Loss per common share — basic and diluted	$ (0.65)	$ (0.60)	$ (0.74)

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

AXOGEN, INC.
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
Years ended December 31, 2021, 2020 and 2019
(In Thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total Shareholders' Equity
	Shares	Amount			
Balance, December 31, 2018	38,901	$ 389	$ 297,319	$ (150,726)	$ 146,982
Stock-based compensation	—	—	10,304	—	10,304
Exercise of stock options and employee stock purchase plan	689	7	3,995	—	4,002
Net loss	—	—	—	(29,135)	(29,135)
Balance, December 31, 2019	39,590	396	311,618	(179,861)	132,153
Stock-based compensation	—	—	8,470	—	8,470
Issuance of restricted and performance stock units	249	2	(2)	—	—
Shares surrendered by employees to pay tax withholdings	(40)	—	(670)	—	(670)
Exercise of stock options and employee stock purchase plan	572	6	3,294	—	3,300
Exercise of Oberland option, net of settlement	248	2	3,680	—	3,682
Net loss	—	—	—	(23,786)	(23,786)
Balance, December 31, 2020	40,619	406	326,390	(203,647)	123,149
Stock-based compensation	—	—	10,919	—	10,919
Issuance of restricted and performance stock units	254	2	(2)	—	—
Exercise of stock options and employee stock purchase plan	864	9	5,458	—	5,467
Net loss	—	—	—	(26,985)	(26,985)
Balance, December 31, 2021	41,737	$ 417	$ 342,765	$ (230,632)	$ 112,550

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

AXOGEN, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
Years ended December 31, 2021, 2020 and 2019
(In Thousands)

	2021	2020	2019
Cash flows from operating activities:			
Net loss	$ (26,985)	$ (23,786)	$ (29,135)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	2,721	1,507	933
Amortization of right-of-use assets	1,818	1,800	1,821
Amortization of intangible assets	202	153	123
Impairment loss on intangible assets	—	—	104
Amortization of debt discount and deferred financing fees	831	232	—
Loss on disposal of equipment	—	3	—
Provision for bad debt	(41)	(105)	514
Provision for inventory write-down	3,314	2,242	1,887
Investment losses (gains)	68	(47)	(972)
Change in fair value of derivatives	28	117	—
Stock-based compensation	10,919	8,470	10,304
Change in operating assets and liabilities:			
Accounts receivable	(499)	(635)	(2,136)
Inventory	(7,478)	(910)	(3,767)
Prepaid expenses and other	2,435	(2,524)	(661)
Accounts payable and accrued expenses	(270)	4,958	2,920
Operating lease obligations	(463)	(1,086)	(1,773)
Cash paid for interest portion of finance leases	(2)	(3)	(4)
Contract and other liabilities	(3)	(12)	(30)
Net cash used in operating activities	(13,405)	(9,626)	(19,872)
Cash flows from investing activities:			
Purchase of property and equipment	(27,811)	(21,905)	(4,664)
Economic development grant proceeds	950	—	—
Purchase of investments	(68,699)	(77,806)	(121,074)
Proceeds from sale of investments	72,500	83,440	153,571
Cash payments for intangible assets	(589)	(692)	(562)
Net cash (used in) / provided by investing activities	(23,649)	(16,963)	27,271
Cash flows from financing activities:			
Proceeds from issuance of long-term debt	15,000	35,000	—
Proceeds from the paycheck protection program loan	—	7,820	—
Repayment of the paycheck protection program loan	—	(7,820)	—
Proceeds from issuance of common stock	—	3,500	—
Payments for debt issuance costs	—	(642)	—
Cash paid for debt portion of finance leases	(15)	(14)	29
Proceeds from exercise of stock options and ESPP stock purchases	5,467	3,300	4,002
Payments of employee tax withholdings in exchange of common stock awards	—	(670)	—
Net cash provided by financing activities	20,452	40,474	4,031
Net (decrease) increase in cash, cash equivalents, and restricted cash	(16,602)	13,885	11,430
Cash, cash equivalents, and restricted cash, beginning of period	55,609	41,724	30,294
Cash, cash equivalents, and restricted cash, end of period	$ 39,007	$ 55,609	$ 41,724

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

AXOGEN, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
Years ended December 31, 2021, 2020 and 2019
(In Thousands)

	2021	2020	2019
Supplemental disclosures of cash flow activity:			
Cash paid for interest, net of capitalized interest	$ 495	$ 822	$ 34
Supplemental disclosure of non-cash investing and financing activities:			
Acquisition of fixed assets in accounts payable and accrued expenses	$ 1,420	$ 1,077	$ 3,212
Acquisition of leasehold asset	$ —	$ 5,250	$ —
Embedded derivative associated with the long-term debt	$ 3,037	$ 2,563	$ —
Obtaining a right-of-use asset in exchange for a lease liability	$ 1,375	$ 14,259	$ 26
Conversion of the Oberland option	$ —	$ 182	$ —
Acquisition of intangible assets in accounts payable and accrued expenses	$ 418	$ —	$ —

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

AXOGEN, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
December 31, 2021, 2020 and 2019
(In Thousands)

1. Basis of Presentation

The accompanying consolidated financial statements include the accounts of Axogen, Inc. (the “Company” or “Axogen”) and its wholly owned subsidiaries, Axogen Corporation (“AC”), Axogen Processing Corporation (“APC”) and Axogen Europe GmbH, as of December 31, 2021 and 2020 and for the three years ended December 31, 2021. The Company’s consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("US GAAP"). All intercompany accounts and transactions have been eliminated in consolidation.

2. Organization and Business

Axogen is the leading company focused specifically on the science, development, and commercialization of the technologies for peripheral nerve regeneration and repair. Axogen is passionate about providing the opportunity to restore nerve function and quality of life for patients with peripheral nerve injuries. Axogen provides innovative, clinically proven, and economically effective repair solutions for surgeons and healthcare providers. Peripheral nerves provide the pathways for both motor and sensory signals throughout the body. Every day, people suffer traumatic injuries or undergo surgical procedures that impact the function of their peripheral nerves. Physical damage to a peripheral nerve or the inability to properly reconnect peripheral nerves can result in the loss of muscle or organ function, the loss of sensory feeling, or the initiation of pain.

Axogen’s platform for peripheral nerve repair features a comprehensive portfolio of products, including Avance® Nerve Graft, a biologically active off-the-shelf processed human nerve allograft for bridging severed peripheral nerves without the comorbidities associated with a second surgical site; Axoguard® Nerve Connector, a porcine (pig) submucosa extracellular matrix (“ECM”) coaptation aid for tensionless repair of severed peripheral nerves; Axoguard® Nerve Protector, a porcine submucosa ECM product used to wrap and protect damaged peripheral nerves and reinforce the nerve reconstruction while preventing soft tissue attachments; Axoguard® Nerve Cap, a porcine submucosa ECM product used to protect a peripheral nerve end and separate the nerve from the surrounding environment to reduce the development of symptomatic or painful neuroma; Avive® Soft Tissue Membrane, a processed human umbilical cord intended for surgical use as a resorbable soft tissue conduit and Axotouch® Two-Point Discriminator, used to measure the innervation density of any surface area of skin. Axogen's portfolio of products is available in the U.S., Canada, Germany, United Kingdom ("UK"), Spain, South Korea, and several other countries.

Axogen suspended the market availability of Avive Soft Tissue Membrane ("Avive") effective June 1, 2021, and management continues discussion with the U.S. Food and Drug Administration (the "FDA") to determine the appropriate regulatory classification and requirements for Avive. The suspension was not based on any safety or product issues or concerns with Avive. Axogen seeks to return Avive to the market, although the Company is unable to estimate the timeframe or provide any assurance that a return to the market will be achievable.

Avance Nerve Graft and Avive Soft Tissue Membrane are processed in the U.S. by Axogen pursuant to a License and Services Agreement, as amended, (the "CTS Agreement') with Community Blood Center (doing business as Community Tissue Services) ("CTS") at the CTS processing facility in Dayton, Ohio. The Axoguard product line is manufactured by Cook Biotech Incorporated ("Cook Biotech"), in West Lafayette, Indiana. The Axotouch Two-Point Discriminator is contract manufactured by Viron Technologies, LLC (doing business as Cybernetics Research Laboratories) (“CRL”) in Tucson, Arizona. CRL supplies the Axotouch Two-Point Discriminator unpackaged, and they are packaged at Axogen’s distribution facility in Burleson, Texas.

In March 2020, the World Health Organization declared the outbreak of the 2019 novel coronavirus and any and all variants thereof ("COVID-19") a pandemic. The global impact of COVID-19 has had a negative effect on the global economy, disrupting the financial markets and significantly impacting the medical industry. The Company implemented certain cost mitigation initiatives in 2020 such as a reduction in pay levels, temporary suspension of tissue processing and deferral of certain projects, among other efforts. As economic activity began to normalize, the Company lifted these cost mitigation initiatives.

Although COVID-19 had a significant impact on the Company's revenue growth in 2020, the Company was able to increase revenue in 2021 as compared to 2020. The rapid development and fluidity of the situation surrounding COVID-19 prevent any prediction as to the ultimate impact COVID-19 will have on the Company's business as new variants continue to spread, causing global supply chain disruptions, labor shortages, and inflationary conditions.

3. Summary of Significant Accounting Policies

Cash and Cash Equivalents and Concentration

The Company considers highly liquid investments with maturities of three months or less at the date of acquisition as cash equivalents in the accompanying consolidated financial statements. The Company has not experienced any losses related to these balances; however, as of December 31, 2021, $32,238 of the cash and cash equivalents balance was in excess of Federal Deposit Insurance Corporation limits. As of December 31, 2021 and 2020, the Company had restricted cash balances of $6,251 and $6,842, respectively. The December 31, 2021 and 2020 balances both include $6,000, which represents collateral for an irrevocable standby letter of credit. Additionally, the December 31, 2021 balance includes an additional irrevocable standby letter of credit in the amount of $250 (See "Note 10 - Long-Term Debt, Net of Financing Fees").

The following table provides a reconciliation of cash and cash equivalents, and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows:

(in thousands)	December 31, 2021	December 31, 2020
Cash and cash equivalents	$ 32,756	$ 48,767
Restricted cash	6,251	6,842
Total cash and cash equivalents, and restricted cash shown in the consolidated statements of cash flows	$ 39,007	$ 55,609

Inventory

Inventory is comprised of unprocessed tissue, work-in-process, Avance Nerve Graft, Axoguard Nerve Connector, Axoguard Nerve Protector, Axoguard Nerve Cap, and Axotouch Two-Point Discriminator finished goods and supplies. Inventory is valued at the lower of cost (first-in, first-out) or net realizable value. Included within Inventory at December 31, 2020 is Avive Soft Tissue Membrane ("Avive"). On May 17, 2021, the Company announced that it would suspend market availability of Avive effective June 1, 2021 pending ongoing discussions with the FDA regarding the regulatory classification of Avive. The Company recorded a write-down of Avive inventory for an amount of $1,251 recorded in cost of goods sold in the consolidated statement of operations for the year ended December 31, 2021 related to this announcement.

The Company monitors the shelf life of its products and historical expiration and spoilage trends and writes down inventory based on the estimated amount of inventory that may not be distributed before expiration or spoilage. To estimate the amount of inventory that will expire prior to being distributed, the Company reviews inventory quantities on hand, historical and projected distribution levels, and historical expiration trends. The Company's calculation of the amount of inventory that will expire prior to distribution has two components: 1) a demand or consumption-based component that compares projected distribution to inventory quantities on hand; and 2) an expiring inventory component that assesses the risk related to inventory that is near expiration by analyzing historical expiration trends to project inventory that will expire prior to being distributed. The Company's model assumes that inventory will be distributed on a first-in, first-out basis. Due to the nature of the inventory (surgical implants with expiration dates) and the fact that significant portions of the Company's inventory is at medical facility consignment locations, estimating the amount of inventory that will expire and the amount of inventory that should be written down involves significant judgments and estimates.

Investments

The Company invests primarily in commercial paper and U.S. government securities and classifies all investments as available-for-sale. Investments are recorded at fair value. The Company elected the fair value option ("FVO") for all of its available-for-sale investments. The FVO election results in all changes in unrealized gains and losses being included in investment income in the consolidated statements of operations.

Derivative Instruments

The Company reviews debt agreements for embedded features. If these features are not clearly and closely related to the debt host, they meet the definition of a derivative and require bifurcation from the host. All derivative instruments are recorded on the consolidated balance sheet at their respective fair values. The Company adjusts the carrying value of the derivative liability to fair value at each reporting date. The changes in the fair value of the derivatives are recorded in the consolidated statement of operations in the period in which they occur. The fair value of embedded derivatives are measured based on equity markets and interest rates, as well as an estimate of the Company's nonperformance risk adjustment. This estimate includes an option adjusted spread and an estimate of the Company's risk-free rate.

The fair value of the embedded derivative features was determined using a probability-weighted expected return model based on four potential settlement scenarios due to (a) a 5% probability of a mandatory prepayment event of the Oberland Facility on December 31, 2023; (b) a 15% probability of a mandatory prepayment event of the Oberland Facility on March 31, 2026; (c) a 5% probability of the prepayment of the Oberland Facility at the Company's option on December 31, 2025; and (d) a 75% probability that the Oberland Facility will be held to its scheduled maturity dates in accordance with the terms of the debt agreement. The estimated settlement value of each scenario, which would include any required make-whole payment, is then discounted to present value using a discount rate that is derived based on the initial terms of the Oberland Facility at issuance and corroborated utilizing a synthetic credit rating analysis. The calculated fair values under these four scenarios is then compared to the fair value of a plain vanilla note, with the difference reflecting the fair value of the embedded derivatives.

Property and Equipment

Property and equipment are stated at cost. Additions and improvements that extend the lives of the assets are capitalized, while expenditures for repairs and maintenance are expensed as incurred. Leasehold improvements are amortized on a straight-line basis over the shorter of the asset's estimated useful life or the remaining lease term. Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets ranging from three to seven years.

When depreciable assets are retired or sold, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized in operations.

Intangible Assets

Intangible assets are recorded at cost and include patents and patent application costs, licenses, and trademarks. Intangible assets are amortized on a straight-line basis over their estimated useful lives of seventeen to twenty years. Trademarks are indefinite lived intangible assets.

Revenue Recognition

The Company enters into contracts to sell and distribute products and services to hospitals and surgical facilities for use in caring for patients with peripheral nerve damage or transection. Revenue is recognized when the Company has met its performance obligations pursuant to its customer contracts in an amount that the Company expects to be entitled to in exchange for the transfer of control of the products and services to the Company's customers.

In the case of products or services sold to a customer under a distribution or purchase agreement, the customers are granted exclusive distribution rights to sell the implants internationally in a territory defined by the contract. These international distributor agreements contain provisions that allow the Company to terminate the distribution agreement with the distributor, and upon termination, the right to repurchase inventory from the distributor at the distributor's cost. The Company has determined that its contractual rights to repurchase distributor inventory upon termination of the distributor agreement are not substantive and do not impact the timing of when control transfers; and therefore, the Company has determined it is appropriate to recognize revenue when: i) the product is shipped via common carrier; or ii) the product is delivered to the customer or distributor, depending on the terms of the agreement. Determining the timing of revenue recognition for such contracts is subject to judgment, because an evaluation must be made regarding the distributor's ability to direct the use of, and obtain substantially all of the remaining benefits from, the implants received from the Company. Changes in these assessments could have an impact on the timing of revenue recognition from sales to distributors.

A portion of the Company's product revenue is generated from consigned inventory maintained at hospitals and independent sales agencies, and also from inventory physically held by field sales representatives. For these types of product sales, the Company retains control until the product has been used or implanted, at which time revenue is recognized.

The Company accounts for shipping and handling activities as a fulfillment cost rather than a separate performance obligation. Amounts billed to customers for shipping and handling are included as part of the transaction price and recognized as revenue when control of the underlying products is transferred to the customer. The related shipping and freight charges incurred by the Company are included in cost of goods sold.

The Company operates in a single reportable segment of peripheral nerve repair, offers similar products to its customers, and enters into consistently structured arrangements with similar types of customers. As such, the Company does not disaggregate revenue from contracts with customers as the nature, amount, timing, and uncertainty of revenue and cash flows does not materially differ within and among the contracts with customers.

The contract with the customer states the final terms of the sale, including the description, quantity, and price of each implant distributed. The payment terms and conditions in the Company's contracts vary; however, as a common business

practice, payment terms are typically due in full withinthirty to sixty days of delivery. Since the customer agrees to a stated price in the contract that does not vary over the contract term, the contracts do not contain any material types of variable consideration, and contractual rights of return are not material. The Company has several contracts with distributors in international markets that include consideration paid to the customer in exchange for distinct marketing and other services. The Company records such consideration paid to the customer as a reduction to revenue from the contracts with those distributor customers.

To pursue its mission most effectively, the Company made a strategic decision to place its full focus on innovations within its surgical solutions portfolio. Effective November 2019, Axogen discontinued all sales of the Acroval Neurosensory and Motor Testing System. Axogen continues to provide service and support for the existing systems in the marketplace. In connection with the Acroval Neurosensory and Motor Testing System, the Company sold extended warranty and service packages to some of its customers who purchased this evaluation and measurement tool, and the prepayment of these extended warranties represent contract liabilities until the performance obligations are satisfied ratably over the term of the contract. The sale of the aforementioned extended warranty represents the only performance obligation the Company satisfies over time and creates the contract liability disclosed below.

The opening and closing balances of the Company's contract receivables and liabilities are as follows:

(in thousands)	Net Receivables	Contract Liabilities, Current	Contract Liabilities, Long-Term
Opening January 1, 2020	$ 16,944	$ 14	$ 15
Closing, December 31, 2020	17,618	14	3
Increase (decrease)	674	—	(12)
Opening January 1, 2021	$ 17,618	$ 14	$ 3
Closing, December 31, 2021	18,158	14	—
Increase (decrease)	540	—	(3)

Allowance for Doubtful Accounts Receivable and Concentration of Credit Risk

The Company evaluates the collectability of accounts receivable to determine the appropriate allowance for doubtful accounts. In determining the amount of the allowance, the Company considers aging of account balances, historical credit losses, customer-specific information, the current economic environment, supportable forecasts, and other relevant factors. An increase to the allowance for doubtful accounts results in a corresponding increase in general and administrative expense. The Company reviews accounts receivable and adjusts the allowance based on current circumstances and charges off uncollectible receivables against the allowance when all attempts to collect the receivable have failed. The Company's history of write-offs has not been significant. The allowance for doubtful accounts balance was $276 and $416 at December 31, 2021 and 2020, respectively.

Concentrations of credit risk with respect to accounts receivable are limited because a large number of geographically diverse customers make up the Company's customer base, thus spreading the credit risk. The Company also controls credit risk through credit approvals and monitoring procedures.

Leases

The Company adopted Accounting Standards Update ("ASU") No. 2016-2—Leases (Topic 842), effective January 1, 2019, using the modified retrospective approach.

The Company determines whether or not a contract contains a lease at the inception date and determines the lease classification, recognition, and measurement at commencement date. The Company classifies a lease based on whether the arrangement is effectively a purchase of the underlying asset. Leases that transfer the control of the underlying asset are classified as finance leases and all others are classified as operating leases. Interest and amortization expense are recognized for operating leases on a straight-line basis. If a change to the lease term leads to a reassessment of the lease classification and remeasurement, assumptions such as the discount rate and variable rents based on a rate or index will be updated as of the remeasurement date. If an arrangement is modified, the Company will reassess whether the arrangement contains a lease. Any subsequent changes in lease payments are recognized when incurred, unless the change requires a remeasurement of the lease liability.

The Company made an accounting policy election to not recognize right-of-use assets and lease obligations that arise from short-term leases, which are defined as leases with a lease term of 12 months or less at the lease commencement date. The Company recognizes lease expense for these leases on a straight-line basis over the lease term.

The Company leases office space, medical lab and research space, a distribution center, a tissue processing center, and equipment. Certain of the Company's leases include options for the Company to extend the lease term. None of the options were reasonably certain of exercise, and therefore are not included in the measurement of lease obligations and right-of-use assets. Certain of the Company's lease agreements include provisions for the Company to reimburse the lessor for common area maintenance, real estate taxes, and insurance, which the Company accounts for as variable lease costs. The Company's lease agreements do not contain any material residual value guarantees or material restrictive covenants.

Net Loss Per Share

Basic net loss per share is computed by dividing reported net loss by the weighted average number of common shares outstanding for the reported period. Diluted net loss per share reflects the potential dilution that could occur if contracts to issue common stock were exercised or converted into common stock of the Company during the reporting period. Diluted net loss per share is computed by dividing net loss by the sum of the weighted average number of common shares and the number of potential dilutive common share equivalents outstanding during the period. Potential dilutive common share equivalents consist of the incremental common shares issuable upon the exercise of vested stock options, restricted stock units (“RSUs”), and performance stock units (“PSUs”).

Due to net losses for the years ended December 31, 2021, 2020 and 2019, basic and diluted net loss per share were the same, as the effect of potentially dilutive securities would have been anti-dilutive.

Research and Development Costs

Research and development costs are expensed as incurred and were $24,177, $17,846 and $17,514 for the years ended December 31, 2021, 2020 and 2019, respectively.

Stock-Based Compensation

The Company measures all stock-based compensation awards, including stock options, RSUs, and PSUs at, or above, the fair market value of the Company's common stock on the date of grant.

The Company estimates the fair value of each option award on the date of grant using a multiple-point Black-Scholes option-pricing model ("Black-Scholes") which uses a weighted average of historical volatility and peer company volatility. The Company’s determination of fair value is affected by the Company’s stock price, as well as assumptions regarding several subjective variables. These variables include, but are not limited to, the Company’s expected stock price volatility over the term of the awards. The Company determines the expected life of each award giving consideration to the contractual terms, vesting schedules, and post-vesting forfeitures. The Company uses the risk-free interest rate on the implied yield currently available on U.S. Treasury issues with an equivalent remaining term approximately equal to the expected life of the award. The value of the portion of the award that is ultimately expected to vest is recognized as expense over the requisite service periods in the Company’s consolidated statements of operations. The expense has been reduced for forfeitures as they occur.

The Company estimates the fair value of RSUs based upon the grant date closing market price of the Company’s common stock.

With respect to PSUs, the number of shares that vest and are issued to the recipient is based upon the Company’s performance as measured against specified targets over the measurement period. The fair value of the PSUs is based on the Company’s closing stock price on the grant date and its estimate of achieving such performance targets. For further discussion and disclosures, see "Note 11 - Stock-Based Incentive Plans."

The Company also has an employee stock purchase plan that is available to all eligible employees as defined by the plan document. Under the Axogen 2017 Employee Stock Purchase Plan ("2017 ESPP"), eligible employees may acquire shares of the Company’s common stock through payroll deductions at a discount to market price. The Company estimates the number of shares to be purchased under the 2017 ESPP at the beginning of each purchase period based upon the fair value of the stock at the beginning of the purchase period using the Black-Scholes model and records estimated compensation expense during the period. Expense is adjusted at the time of stock purchase.

Use of Estimates

The preparation of consolidated financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Management believes the critical accounting estimates relating to inventory, derivative instruments, and stock-based compensation affect the Company's more significant judgments and estimates used in the preparation of the Company's consolidated financial statements. Actual results could differ materially from those estimates.

Recent Accounting Pronouncements

In November 2021, the Financial Accounting Standards Board ("FASB") issued ASU No. 2021-10, *Government Assistance (Topic 832), Disclosures by Business Entities about Government Assistance,* which requires business entities to provide certain annual disclosures when they have received government assistance and use a grant or contribution accounting model by analogy to other accounting guidance (e.g., a grant model under International Accounting Standards 20, *Accounting for Government Grants and Disclosure of Government Assistance*). The disclosures should provide the nature of the transaction, including the significant terms and conditions of the transaction, the accounting policies used to account for the transaction, and the dollar amounts by line item on the financial statements that are affected by the transaction. The adoption of this ASU will be required beginning with the Company's Annual Report on Form 10-K for the year ending December 31, 2022, on either a prospective basis or retrospective basis. Early adoption is permitted. The adoption of this guidance is not expected to have a material impact on the Company's consolidated financial statements.

Recently Adopted Accounting Pronouncements

Effective January 1, 2021, the Company adopted ASU No. 2019-12, *Income Taxes (Topic 740), Simplifying the Accounting for Income Taxes,* which was intended to simplify the accounting for income taxes by removing certain exceptions to the general rules found in *Topic 740 - Income Taxes*. The adoption of this guidance did not have a material impact on the Company's consolidated financial statements.

Effective January 1, 2021, the Company adopted ASU 2020-08, *Codification Improvements to Subtopic 310-20, Receivables-Nonrefundable Fees and Other Costs.* The adoption of this guidance did not have a material impact on the Company's consolidated financial statements.

The Company's management has reviewed and considered all other recent accounting pronouncements and believe there are none that could potentially have a material impact on the Company's consolidated financial condition, results of operations, or disclosures.

4. Inventory

Inventory consists of the following:

(in thousands)	December 31, 2021	December 31, 2020
Finished goods	$ 11,011	$ 8,876
Work in process	813	751
Raw materials	4,869	2,902
Inventory	$ 16,693	$ 12,529

The provision for inventory write-down was $3,314, $2,242 and $1,887 for the years ended December 31, 2021, 2020 and 2019, respectively. The provision for inventory write-down for the year ended December 31, 2021 includes the Avive write-down of $1,251.

5. Fair Value Measurement

The Company uses fair value measurements to record fair value adjustments to certain assets and liabilities and to determine fair value disclosures. Cash equivalents, investments and derivative instruments are recorded at fair value on a recurring basis. Fair value is defined as the price that would be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value maximize the use of observable inputs and minimize the use of unobservable inputs. The fair value hierarchy defines a three-level valuation hierarchy for classification and disclosure of fair value measurements as follows:

Level 1 – Quoted prices in active markets for identical assets or liabilities.

Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; 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 assets or liabilities.

Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The Company has elected the FVO for its investments. Unrealized gains and losses on investments have been reported in investment income in the consolidated statements of operations at each reporting date. The Company classifies cash equivalents (consisting of money market funds) and investments in U.S. government securities as Level 1 within the fair value hierarchy. Investments in commercial paper and corporate bonds are classified as Level 2 within the fair value hierarchy.

On June 30, 2020, the Company entered into the Oberland Facility (see "Note 10 - Long-Term Debt, Net of Financing Fees") and obtained the first tranche of $35,000 at closing. On June 30, 2021, the second tranche of $15,000 was drawn down by the Company. The Company determined that the term debt instrument included certain embedded features that required separate accounting identified as the Debt Derivative Liabilities and that the equity contract (the “Common Stock Derivative Option Liability”) entered into concurrently were required to be classified as liabilities and recorded at fair value, requiring Level 3 fair value measurements. The Common Stock Derivative Option Liability was settled on December 10, 2020 (see "Note 10 - Long-Term Debt, Net of Financing Fees"). The Debt Derivative Liabilities are measured using a ‘with and without’ valuation model to compare the fair value of the Oberland Facility including the identified embedded derivative features and the fair value of a plain vanilla note with the same terms. The fair value of the Oberland Facility including the embedded derivative features was determined using a probability-weighted expected return model based on four potential settlement scenarios for the Oberland Facility due to (a) a 5% probability of a mandatory prepayment event of the Oberland Facility on December 31, 2023; (b) a15% probability of a mandatory prepayment event of the Oberland Facility on March 31, 2026; (c) a 5% probability of the prepayment of the Oberland Facility at the Company’s option on December 31, 2025; and (d) a 75% probability that the Oberland Facility will be held to its scheduled maturity dates in accordance with the terms of the debt agreement. The estimated settlement value of each scenario, which would include any required make-whole payment (see "Note 10 - Long-Term Debt, Net of Financing Fees"), is then discounted to present value using a discount rate that is derived based on the initial terms of the Oberland Facility at issuance and corroborated utilizing a synthetic credit rating analysis.

The significant inputs that are included in the valuation of the Debt Derivative Liability - first tranche include:

	December 31, 2021	December 31, 2020
Input		
Remaining term (years)	5.5	6.5
Maturity date	June 30, 2027	June 30, 2027
Coupon rate	9.50%	9.50%
Revenue participation payments	Maximum each year	Maximum each year
Discount rate	10.72% [1]	8.70 % [1]
Probability of mandatory prepayment before 2024	5.0% [1]	5.0% [1]
Estimated timing of mandatory prepayment event before 2024	December 31, 2023 [1]	December 31, 2023 [1]
Probability of mandatory prepayment 2024 or after	15.0% [1]	15.0% [1]
Estimated timing of mandatory prepayment event 2024 or after	March 31, 2026 [1]	March 31, 2026 [1]
Probability of optional prepayment event	5.0% [1]	5.0% [1]
Estimated timing of optional prepayment event	December 31, 2025 [1]	December 31, 2025 [1]

[1] Represents a significant unobservable input.

The significant inputs that are included in the valuation of the Debt Derivative Liability - second tranche include:

	December 31, 2021
Input	
Remaining term (years)	6.5
Maturity date	June 30, 2028
Coupon rate	9.50%
Revenue participation payments	Maximum each year
Discount rate	13.21 % (1)
Probability of mandatory prepayment before 2024	5.0% (1)
Estimated timing of mandatory prepayment event before 2024	December 31, 2023 (1)
Probability of mandatory prepayment 2024 or after	15.0% (1)
Estimated timing of mandatory prepayment event 2024 or after	March 31, 2026 (1)
Probability of optional prepayment event	5.0% (1)
Estimated timing of optional prepayment event	December 31, 2025 (1)

[1] Represents a significant unobservable input.

The following tables represent the Company's fair value hierarchy for its financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2021 and 2020:

(in thousands)	Level 1	Level 2	Level 3	Total
December 31, 2021				
Assets:				
Money market funds	$ 22,012	$ —	$ —	$ 22,012
U.S. government securities	12,081	—	—	12,081
Commercial paper	—	39,249	—	39,249
Total assets	$ 34,093	$ 39,249	$ —	$ 73,342
Liabilities:				
Debt derivative liabilities	$ —	$ —	$ 5,562	$ 5,562
Total liabilities	$ —	$ —	$ 5,562	$ 5,562

December 31, 2020	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$ 23,044	$ —	$ —	$ 23,044
U.S. government securities	12,123	—	—	12,123
Corporate bonds	—	6,408	—	6,408
Commercial paper	—	36,668	—	36,668
Total assets	$ 35,167	$ 43,076	$ —	$ 78,243
Liabilities:				
Debt derivative liability	$ —	$ —	$ 2,497	$ 2,497
Total liabilities	$ —	$ —	$ 2,497	$ 2,497

The changes in Level 3 liabilities measured at fair value on a recurring basis were as follows:

(in thousands)	Common Stock Derivative Option Liability	Debt Derivative Liabilities
Balance, December 31, 2019	$ —	$ —
Acquired	175	2,387
Change in fair value included in net loss	7	110
Settlement	(182)	—
Balance, December 31, 2020	—	2,497
Acquired	—	3,037
Change in fair value included in net loss	—	28
Balance, December 31, 2021	$ —	$ 5,562

The fair value of cash, restricted cash, accounts receivable, accounts payable and accrued expenses approximates the carrying values because of the short-term nature of these instruments. The Oberland Facility is classified as Level 3 within the fair value hierarchy. The carrying value and fair value of the Oberland Facility were $45,325 and $52,605 at December 31, 2021, respectively, and $32,623 and $36,855 at December 31, 2020, respectively.

There were no changes in the levels or methodology of the measurement of financial assets or liabilities during the years ended December 31, 2021 and 2020.

6. Prepaid Expenses and Other

Prepaid expenses and other consist of the following:

(in thousands)	December 31, 2021	December 31, 2020
Prepaid insurance	$ —	$ 2,596
Stock option receivable	3	2
Litigation receivable	23	23
Prepaid events	54	203
Prepaid marketing	620	587
Prepaid software license	215	220
Prepaid professional fees	207	251
Other prepaid items	739	414
Prepaid expenses and other	$ 1,861	$ 4,296

The policy year for the Company's insurance runs on a calendar year and as such, a significant portion of the policy payment is made at the beginning of the new year and amortized to expense throughout the remaining year. For the year ended December 31, 2020, the insurance premium was paid prior to year-end, resulting in a prepaid balance of $2,596.

7. Property and Equipment, Net

Property and equipment, net consist of the following:

(in thousands)	December 31, 2021	December 31, 2020
Furniture and equipment	$ 5,100	$ 2,334
Leasehold improvements	14,952	12,983
Processing equipment	3,984	2,634
Land	731	731
Projects in process	45,660	24,541
Property and equipment, at cost	70,427	43,223
Less: accumulated depreciation and amortization	(7,546)	(4,825)
Property and equipment, net	$ 62,881	$ 38,398

Depreciation expense was $2,721, $1,507 and $933 for the years ended December 31, 2021, 2020 and 2019, respectively. The significant increase in projects in process is related to the Company's Axogen Processing Center ("APC Facility") (See "Note 14 - Commitments and Contingencies").

8. Intangible Assets, Net

Intangible assets consist of the following:

	December 31, 2021			December 31, 2020		
(in thousands)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Amortizable intangible assets:						
Patents	$ 2,469	$ (234)	$ 2,235	$ 1,496	$ (139)	$ 1,357
License agreements	1,101	(852)	249	1,093	(745)	348
Total amortizable intangible assets	3,570	(1,086)	2,484	2,589	(884)	1,705
Unamortized intangible assets:						
Trademarks	375	—	375	349	—	349
Total intangible assets	$ 3,945	$ (1,086)	$ 2,859	$ 2,938	$ (884)	$ 2,054

License agreements are being amortized over periods ranging from seventeen to twenty years. Patents are being amortized over periods up to twenty years. Amortization expense was $202, $153 and $123 for the years ended December 31, 2021, 2020 and 2019, respectively. In January 2019, the Company rebranded its logo and product name designs, and as a result the Company recorded a $104 impairment charge related to the previous logo and product design names. This charge is recorded in general and administrative expense in the accompanying consolidated statement of operations.

As of December 31, 2021, future amortization of patents and license agreements are as follows:

Year Ending December 31,	(in thousands)
2022	$ 233
2023	207
2024	130
2025	130
2026	129
Thereafter	1,655
Total	$ 2,484

License Agreements

The Company has entered into multiple license agreements with the University of Florida Research Foundation and the University of Texas at Austin (together, the "License Agreements"). Under the terms of the License Agreements, the Company acquired exclusive worldwide licenses for underlying technology used in repairing and regenerating nerves. The licensed technologies include the rights to issued patents and patents pending in the U.S. and international markets. The effective term of the License Agreements extends through the term of the related patents and the agreements may be terminated by the Company with 60 days prior written notice. Additionally, in the event of default, licensors may terminate an agreement if the Company fails to cure a breach after written notice. The License Agreements contain the key terms listed below:

- The Company pays royalty fees ranging from 1% to 3% under the License Agreements based on net sales of licensed products. One of the agreements also contains a minimum royalty of $13 per quarter, which may include a credit in future quarters in the same calendar year for the amount the minimum royalty exceeds the royalty fees. Also, when the Company pays royalties to more than one licensor for sales of the same product, a royalty stack cap applies, capping total royalties at 3.75%;

- If the Company sub-licenses technologies covered by the License Agreements to third parties, the Company would pay a percentage of sub-license fees received from the third party to the licensor. Currently, the Company does not sub-license any technologies covered by the License Agreements. The Company is not considered a sub-licensee under the License Agreements and does not owe any sub-licensee fees for its own use of the technologies;

- The Company reimburses the licensors for certain legal expenses incurred for patent prosecution and defense of the technologies covered by the License Agreements; and

- Currently, under the University of Texas at Austin's agreement, the Company would owe a $ 15 milestone fee upon receiving a Phase II Small Business Innovation Research or Phase II Small Business Technology Transfer grant involving the licensed technology. The Company has not received either grant and does not owe such a milestone fee. A milestone fee to the University of Florida Research Foundation of $ 2 is due if the Company receives FDA approval of its Avance Nerve Graft, a milestone fee of $25 is due upon the first commercial use of certain licensed technology to provide services to manufacture products for third parties and a milestone fee of $10 is due upon the first use to manufacture products that utilize certain technology that is not currently incorporated into the Company's products.

Royalty fees were $2,715, $2,289 and $2,119 for the years ended December 31, 2021, 2020 and 2019, respectively, and are included in sales and marketing expense in the accompanying consolidated statements of operations.

9. Accounts Payable and Accrued Expenses

Accounts payable and accrued expenses consist of the following:

(in thousands)	December 31, 2021	December 31, 2020
Accounts payable	$ 5,923	$ 4,597
Accrued expenses	6,863	3,778
Accrued compensation	9,673	13,593
Accounts payable and accrued expenses	$ 22,459	$ 21,968

10. Long-Term Debt, Net of Financing Fees

Long-term debt, net of financing fees consists of the following:

(in thousands)	December 31, 2021	December 31, 2020
Oberland Facility - first tranche	$ 35,000	$ 35,000
Oberland Facility - second tranche	15,000	—
Less - unamortized debt discount and deferred financing fees	(5,179)	(2,973)
Long-term debt, net of financing fees	$ 44,821	$ 32,027

Oberland Facility

On June 30, 2020, the Company entered into a seven-year financing agreement with Oberland Capital (the "Oberland Facility") and obtained the first tranche of $35,000 at closing. On June 30, 2021, the second tranche of $15,000 was drawn down by the Company. The financing costs for this facility were $642 and were recorded as a contra liability to the debt facility. As of December 31, 2021, the Company has paid all of the financing costs.

The Oberland Facility requires quarterly interest payments for seven years. Interest is calculated as 7.5% plus the greater of the London Interbank Offered Rate ("LIBOR") or 2.0% (9.5% as of December 31, 2021). Each tranche of the Oberland Facility has a term of seven years from the date of issuance (with the first tranche issued on June 30, 2020 maturing on June 30, 2027 and the second tranche issued on June 30, 2021 maturing on June 30, 2028). In connection with the Oberland Facility, the Company entered into a revenue participation agreement with Oberland Capital, which provides that, among other things, a quarterly royalty payment as a percentage of the Company's net revenues, up to $70 million in any given year, subject to certain limitations set forth therein, during the period commencing on the later of (i) April 1, 2021 and (ii) the date of funding of a tranche of the loan, and ending on the date upon which all amounts owed under the Oberland Facility have been paid in full (the "Revenue Participation Agreement"). Royalty payments commenced on September 30, 2021. This royalty structure results in approximately 1.0% per year of additional interest payments on the outstanding loan amount. The Company recorded $646 as interest expense for this Revenue Participation Agreement for the year ended December 31, 2021. The Company pays the quarterly debt interest on the last day of the quarter, and for the years ended December 31, 2021 and 2020, paid $4,103 and $1,709, respectively, to Oberland Capital. The Company capitalized interest of $4,277 and $997 for the years ended December 31, 2021 and 2020, respectively, towards the costs to construct and retrofit its APC Facility in Vandalia, OH (See "Note 14 - Commitments and Contingencies"). To date, the Company has capitalized interest of $ 5,274 related to this project. The capitalized interest is recorded as part of property and equipment in the consolidated balance sheets.

Additionally, Oberland Capital had the right to purchase up to $3,500 worth of the Company's common stock from the Company in one transaction at any time after closing of the Oberland Facility until the later of (i) the date all amounts due under the Oberland Facility are repaid and (ii) June 30, 2027 (the "Oberland Option"). The purchase price of the common stock was calculated based on the 45-day moving average of the closing stock price on the day prior to the purchase. On December 10, 2020, Oberland Capital exercised in full its option under the Oberland Option. The exercise price was determined to be $14.13, resulting in gross proceeds to the Company of $3,500 and the issuance of 247,699 shares to TPC Investments II LP, a wholly owned subsidiary of Oberland Capital. In conjunction with the issuance of the shares, Oberland Capital received certain protective rights (including protection from down-round stock issuances) for a period of one year subsequent to the issuance. These rights expired on December 10, 2021.

The amounts outstanding under the Oberland Facility may be accelerated upon certain events, including: (a) required mandatory prepayments upon an asset sale; (b) in the event the Company is subject to (i) any litigation brought by a Governmental Authority (as defined in the Oberland Facility) including intervention after litigation is commenced by a Person (as defined in the Oberland Facility), or (ii) any final administrative action by a Governmental Authority, in each case arising out of or in connection with any of the Company's registry studies, payments made to doctors or training activities with respect to healthcare professionals (excluding certain final administrative actions that have been fully and finally resolved by the parties pursuant to a settlement agreement) or (c) upon the occurrence of an event of default (either automatically or at the option of Oberland Capital depending on the nature of the event). In addition, the Company has the right to prepay any amounts outstanding under the Oberland Facility. Upon maturity or upon such earlier repayment of the Oberland Facility, the Company will repay the principal balance and provide a make-whole payment calculated to generate an internal rate of return to Oberland Capital equal to 11.5%, less the total of all quarterly interest and royalty payments previously paid to Oberland Capital. See Note 14 - Commitments and Contingencies for further information.

Upon the occurrence of an event of default, the interest rate incurred on amounts outstanding under the Oberland Facility will be increased by 4%. The Oberland Facility includes a financial covenant requiring the Company to achieve revenue targets of $8,750 for the third and four quarters of 2020, $17,500 for the first and second quarters of 2021 and $20,000 for each quarter thereafter. As of December 31, 2021, the Company was in compliance with all the covenants. In the event of a failure to meet such covenant the Company may avoid a default by electing to be subject to a liquidity covenant and meeting all of the obligations required by such covenant. Specifically, the liquidity covenant provides that the Company must maintain on deposit in a cash collateral account an amount not less than 1.1 times the aggregate outstanding principal balance of all outstanding loan amounts. The borrowings under the Oberland Facility are secured by substantially all of the assets of the Company.

Accounting Considerations

The Company assessed the accounting impact of the Oberland Facility and the related agreements entered into with Oberland Capital. The Company concluded that the Oberland Facility and the Revenue Participation Agreement should be assessed on a combined unit of account basis (with the Revenue Participation Agreement being considered as an embedded feature with the Oberland Facility), and that the Oberland Option should be considered as a separate freestanding instrument for analysis purposes.

In relation to the Oberland Facility and Revenue Participation Agreement, the Company assessed the identified embedded features to determine if they would require separate accounting. In performing this assessment, the Company concluded the following embedded features met the definition of a derivative and would not be considered clearly and closely related to the debt instrument, requiring separate accounting as bifurcated derivatives:

- Mandatory prepayments upon an asset sale or litigation involving the government, including the make-whole payment (put rights)
- Optional or automatic prepayment upon an event of default (put rights)
- Payments under the Revenue Participation Agreement (contingent interest feature)
- Additional interest upon events of default (contingent interest feature)

The Company considered these separable embedded features on a combined basis as a single derivative feature. The Company estimated the fair value of these features as $2,387 as of the date of issuance of the Oberland Facility (see "Note 5 - Fair Value Measurement") and recorded this value as a debt derivative liability. As a result of the second tranche draw on June 30, 2021, the Company recorded an additional derivative and estimated the fair value to be $1,961, along with an increase of $1,076 related to the first tranche derivative.

In relation to the Oberland Option, the Company concluded that the equity contract met the definition of a derivative and did not qualify for an exception from derivative accounting. As such, the Company concluded that the Oberland Option should be classified as a liability. The Company estimated the fair value of the Common Stock Derivative Option Liability as $175 as of the date of issuance of the Oberland Facility (see "Note 5 - Fair Value Measurement") and recorded this value as the Common Stock Derivative Option Liability. The Common Stock Derivative Option Liability was settled on December 10, 2020.

Other Long-Term Debt

On April 23, 2020, the Company received a Small Business Administration ("SBA") loan under the Paycheck Protection Program ("PPP") in the amount of $7,820. The loan was obtained pursuant to the original guidance of the SBA to preserve positions in the Company by providing necessary economic relief during this period of reduced surgical procedures because of the negative business effects of COVID-19. The Company believed it correctly applied for the loan, met the initial intent of the PPP program to preserve jobs and believed it complied with the representations provided in the loan documents. However,

subsequent to obtaining the loan, the U.S. Treasury Department issued guidance, which the Company believed contradicted the original intent and language of the PPP, providing that public companies are unlikely to be able to meet the standards for receiving the PPP loan. As a result of this change, the Company believed it was in its best business interests to repay the loan and did so on May 5, 2020.

Other Credit Facilities

The Company maintains restricted cash of $6,251 and $6,842 at December 31, 2021 and 2020, respectively. The December 31, 2021 and 2020 balances both include $6,000, which represents collateral for an irrevocable standby letter of credit. In March 2021, the Company entered into an agreement which required an additional irrevocable standby letter of credit in the amount of $250.

11. Stock-Based Incentive Plans

The Company maintains two stock-based incentive plans: the Axogen, Inc. 2019 Amended and Restated Long-Term Incentive Plan, as amended ("2019 Plan") and the Axogen 2017 Employee Stock Purchase Plan (“2017 ESPP”).

Long-Term Incentive Plan

At the 2019 Annual Meeting of Shareholders held on August 14, 2019, the shareholders approved the 2019 Plan, which allows for the award of incentive stock options, non-qualified stock options, PSUs and RSUs to employees, directors, and consultants. Awards under the 2019 Plan are priced at, or above, the fair market value of the Company's common stock on the date of grant. At the 2021 Annual Meeting of Shareholders held on May 10, 2021, the shareholders approved an additional 2,500,000 shares to be allocated for issuance under the 2019 Plan. The number of shares of common stock authorized for issuance under the 2019 Plan is (a) 5,885,482 shares, comprised of (i) 5,500,000 new authorized shares and (ii) 385,482 unallocated shares of common stock available for issuance as of August 14, 2019 pursuant to the Company’s 2010 Stock Incentive Plan, as amended and restated (the “2010 Plan”), that were not then subject to outstanding awards; plus (b) shares under the 2010 Plan and the 2019 Plan that are cancelled, forfeited, expired, unearned or settled in cash, in any such case that does not result in the issuance of common stock. No future awards will be made under the 2010 Plan. As of December 31, 2021, 3,630,823 shares of common stock were available for issuance under the 2019 Plan.

The Company recognized stock-based compensation expense, which consisted of compensation expense related to employee stock options, PSUs and RSUs based on the value of stock-based payment awards that are ultimately expected to vest during the period and stock-based compensation expense related to the 2017 ESPP of $10,919, $8,470 and $10,304 for the years ended December 31, 2021, 2020 and 2019, respectively.

As of December 31, 2021, there was $19,502 of unrecognized compensation costs related to non-vested stock options and restricted stock awards. This cost is expected to be recognized over a weighted-average period of 2.09 years for stock options and 2.04 years for restricted stock awards.

Stock Options

The options granted to employees prior to July 1, 2017 typically vest 25% one year after the grant date and 12.5% every six months thereafter for the remaining three-year period until fully vested after four years. The options granted to employees after July 1, 2017 typically vest 50% two years after the grant date and 12.5% every six months thereafter for the remaining two-year period until fully vested after four years. The options granted to directors and certain options granted from time to time to certain executive officers have vested ratably over three years or 25% per quarter over one year. Options typically have terms ranging from seven to ten years.

A summary of the stock option activity is as follows:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2019	3,420,181	$ 12.69	5.70	$ 26,074
Granted	663,098	$ 9.29		
Forfeited	(107,541)	$ 19.71		
Exercised	(459,254)	$ 5.36		
Outstanding at December 31, 2020	3,516,484	$ 12.79	5.93	$ 25,718
Granted	656,398	$ 20.00		
Forfeited	(194,301)	$ 17.02		
Exercised	(783,843)	$ 5.89		
Outstanding at December 31, 2021	3,194,738	$ 15.65	6.45	$ 2,236
Exercisable at December 31, 2021	1,865,381	$ 15.08	4.95	$ 1,932

The exercise price per share of each option is equal to the fair market value of the underlying share on the date of grant. For the years ended December 31, 2021, 2020 and 2019, $5,467, $3,300 and $4,002, respectively, in cash proceeds were included in the Company's consolidated statements of cash flows as a result of the exercise of stock options and Employee Stock Purchase Plan stock purchases. The intrinsic value of equity awards exercised during the years ended December 31, 2021, 2020 and 2019 was $14,167, $5,595 and $9,553, respectively.

The following weighted-average assumptions were used for stock options granted during the years ended December 31:

	Year Ended December 31,		
	2021	2020	2019
Expected term (in years)	5.88	5.88	5.76
Expected volatility	58.38 %	58.46 %	54.97 %
Risk free rate	1.02 %	0.49 %	1.71 %
Expected dividends	— %	— %	— %

Restricted and Performance Stock Units

RSUs granted to employees have a requisite service period of four years. The RSUs granted to directors and certain RSUs granted from time to time to certain executive officers have a requisite service period of three years, while certain of these RSUs have a requisite service period of one year. The Company expenses the fair value of RSUs on a straight-line basis over the requisite service period.

A summary of the status of non-vested RSUs and PSUs as of December 31, 2021 and 2020 and the changes during the years then ended are as follows:

	Outstanding Restricted and Performance Stock Units			
	Stock Units	Weighted Average Fair Value at Date of Grant per Share	Weighted Average Remaining Vesting Life (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2019	1,113,697	$ 21.62	2.26	$ 19,800
Granted	1,008,869	$ 9.57		
Released	(247,333)	$ 19.66		
Forfeited	(92,328)	$ 18.64		
Outstanding at December 31, 2020	1,782,905	$ 15.23	1.83	$ 31,825
Granted	898,264	$ 20.35		
Released	(253,881)	$ 17.50		
Forfeited	(696,513)	$ 13.00		
Outstanding at December 31, 2021	1,730,775	$ 18.45	1.51	$ 19,633

The total fair value of restricted stock vested during the years ended December 31, 2021, 2020 and 2019 was $4,481, $3,811 and $1,467, respectively. The Company issues registered shares of common stock to satisfy stock option exercises and restricted stock grants.

Performance Stock Units

The Company estimates the fair value of the PSUs based on its closing stock price at the time of grant and its estimate of achieving such performance target and records compensation expense as the milestones are achieved. PSUs generally have a requisite service period of three years and are subject to graded vesting conditions based on revenue goals of the Company. The Company expenses their fair value over the requisite service period. Over the performance period, the number of shares of common stock that will ultimately vest and be issued and the related compensation expense will be adjusted based upon the Company's estimate of achieving such performance target. The number of shares delivered to recipients and the related compensation cost recognized as an expense will be based on the actual performance metrics as set forth in the applicable PSU award agreement. The amount actually awarded will be based upon achievement of the performance measures.

On December 18, 2017, December 27, 2018 and December 17, 2019, the Compensation Committee of the Board of Directors approved PSU awards to certain employees related to their work on the Company's Biologics License Application ("BLA"). The PSU awards consist of a targeted total award of 378,863 shares, of which 298,587 shares remain available as of December 31, 2021. The number of shares is allocated to certain milestones related to the BLA submission to and approval by the FDA. These awards are expected to vest beginning when the BLA is submitted to the FDA, which is not expected to be until 2023. The performance measure is based upon achieving each of the specific milestones and will vest 50% upon achieving each of the milestones and 50% one year later. No expense has been recognized on these awards yet.

On December 18, 2017, the Compensation Committee of the Board of Directors approved PSU awards of 114,700 shares tied to 2019 revenue. The award was issued at 72.3% of achievement and therefore, 27.7% of the stock compensation expense or $536 relating to this grant, was forfeited or reversed in the first quarter of 2020.

On December 27, 2018, the Compensation Committee of the Board of Directors approved PSU awards of130,400 tied to 2020 revenue. As a result of COVID-19, it was determined these PSU awards would not be granted and therefore stock compensation related to these awards of $1,161 was forfeited in 2020. No expense related to these awards was recorded in 2021 and the awards were forfeited.

On March 16, 2020, the Compensation Committee of the Board of Directors approved PSU awards of357,000 shares tied to 2021 revenue. In June 2020, the Company concluded that the performance metrics relating to these awards with performance metrics tied to 2021 revenue were no longer probable and therefore stock compensation expense related to these awards of $340 was reversed in 2020. Subsequently, in the fourth quarter of 2020, it became probable that the Company would achieve50% of these performance metrics and therefore adjusted stock compensation expense. In the third quarter of 2021, it was determined that the performance metrics tied to 2021 revenue were no longer probable; therefore, stock compensation expense related to these awards of $804 was reversed in 2021 and the awards were forfeited.

On July 17, 2020, the Compensation Committee of the Board of Directors approved PSU awards of 144,300 shares tied to 2020 revenue. These awards were granted in mid-year with certain revenue targets adjusted for the impact of COVID-19. These 2020 awards granted in July reached 110% achievement of revenue targets.

On March 16, 2021, the Compensation Committee of the Board of Directors approved PSU awards of 332,200 shares tied to 2022 revenue, with a payout ranging from 0% to 200% upon achievement of specific revenue goals. In the fourth quarter of 2021, it was determined that the performance metrics tied to 2022 revenue were no longer probable; therefore, stock compensation expense related to these awards of $1,831 was reversed in 2021.

At December 31, 2021, the total future stock compensation expense related to non-vested performance awards is expected to be $484 for those awards issued on December 18, 2017 and July 17, 2020. Future stock compensation expense has not been calculated on those awards for which expensing has not yet begun which include the BLA awards and the awards tied to 2022 revenue.

Employee Stock Purchase Plan

The 2017 ESPP allows eligible employees to acquire shares of the Company's common stock through payroll deductions at a discount to market price (currently 15.00%) of the lesser of the closing price of the Company's common stock on the first day or last day of the offering period. The offering period is currently 6 months and the offering prices are subject to change. Participants may not purchase more than $25 of the Company's common stock in a calendar year. Stock-based compensation expense related to the 2017 ESPP, included in total stock-based compensation expense, was $401, $493 and $744 for the years ended December 31, 2021, 2020 and 2019, respectively. As of December 31, 2021, there were 600,000 shares of the Company's common stock authorized for issuance under the 2017 ESPP and 223,678 shares remain available for issuance.

12. Income Taxes

Deferred income taxes are accounted for using the balance sheet approach, which requires recognition of deferred tax assets and liabilities for the expected future consequences of temporary differences between the financial reporting basis and the tax basis of assets and liabilities, as measured by enacted state and federal tax rates. Deferred tax assets and deferred tax liabilities are as follows:

(in thousands)	December 31, 2021	December 31, 2020
Deferred tax assets:		
Net operating loss carryforwards	$ 47,021	$ 42,317
Inventory write-down	653	397
Depreciation		—
Interest limitation	453	115
Allowance for doubtful accounts	70	106
Lease obligations	5,736	5,551
Stock-based compensation	3,985	3,218
Research and development credit	6	—
Total deferred tax assets	57,924	51,704
Deferred tax liabilities:		
Depreciation	(692)	(1,145)
Amortization	(116)	(34)
Right-of-use assets	(3,861)	(4,004)
Contract liabilities	(4)	(4)
Total deferred tax liabilities	(4,673)	(5,187)
Net deferred tax assets	$ 53,251	$ 46,517
Valuation allowance	$ (53,251)	$ (46,517)

A valuation allowance is provided to reduce the deferred tax assets reported if, based on the weight of the evidence, it is more-likely-than-not that a portion or none of the deferred tax assets will be realized. As of December 31, 2021 and 2020, management assessed the realizability of deferred tax assets. After consideration of all the evidence, including reversal of

deferred tax liabilities, future taxable income and other factors, management determined that a full valuation allowance was necessary as of December 31, 2021 and 2020. The valuation allowance increased by $6,734 and $6,585 during 2021 and 2020, respectively, primarily as a result of the increase in the net operating loss carryforward in each year.

The difference between the financial statement income tax benefit and the income tax benefit using statutory rates is primarily due to the valuation allowanceThe Company's effective income tax rate differs from the statutory federal income tax rate for the years ended December 31, 2021, 2020 and 2019 as follows:

	Year Ended December 31,		
	2021	2020	2019
Federal tax rate	21.0 %	21.0 %	21.0 %
State taxes - net of Federal benefit	5.1	7.3	4.1
Permanent items and other deductions	(1.4)	(0.6)	(4.3)
Valuation allowance	(24.7)	(27.7)	(20.8)
Effective income tax rate	— %	— %	— %

The Company identifies and evaluates uncertain tax positions, if any, and recognizes the impact of uncertain tax positions for which there is a less than more-likely-than-not probability of the position being upheld when reviewed by the relevant taxing authority. Such positions are deemed to be unrecognized tax benefits and a corresponding liability is established on the consolidated balance sheet. The Company has not recognized a liability for uncertain tax positions. If there were an unrecognized tax benefit, the Company would recognize interest accrued related to unrecognized tax benefits in interest expense and penalties in operating expenses.

As of December 31, 2021, the Company had tax-effected net operating loss carryforwards of $47,021 to offset future taxable income. Net operating losses incurred in tax years beginning on or after January 1, 2018 are carried forward indefinitely. Net operating losses incurred in tax years prior to January 1, 2018 are subject to a twenty year carryforward before expiring. A portion of the net operating loss carryforwards may expire due to limitations imposed by Section 382 of the Internal Revenue Code. Future utilization of the available net operating loss carryforward may be limited under Internal Revenue Code Section 382 as a result of changes in ownership.

The Company files U.S. federal and state income tax returns in jurisdictions with varying statutes of limitations. In the normal course of business, the Company is subject to examination by taxing authorities throughout the U.S. These examinations could include examining the timing and amount of deductions, the allocation of income among various tax jurisdictions and compliance with federal, state, and local laws. The Company's remaining open tax years subject to examination by federal tax authorities include the years ended December 31, 2018 through 2021. The Company's remaining open tax years subject to examination by state and foreign tax authorities include the years ended December 31, 2017 through 2021. However, for tax years 2004-2017, federal and state taxing authorities may examine and adjust loss carryforwards in the years in which those loss carryforwards are ultimately utilized.

Legislation enacted in 2018, titled the Tax Cuts and Jobs Act of 2017, subjects a U.S. shareholder to tax on global intangible low-taxed income ("GILTI") earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740, No. 5, *Accounting for Global Intangible Low-Taxed Income*, states that an entity can make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as GILTI in future years or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. The Company has elected to account for GILTI in the year the tax is incurred.

The Company has no recorded income tax expense or income tax benefit for the years ended December 31, 2021, 2020 and 2019 due to the generation of net operating losses, the benefits of which have been fully reserved. The Company does not believe there are any additional tax refund opportunities currently available.

13. Retirement Plan

The Company sponsors the Axogen 401(k) plan (the "401(k) Plan"), a defined contribution plan covering substantially all employees of the Company. All full-time employees who have attained the age of 18 are eligible to participate in the 401(k) Plan. Eligibility is immediate upon employment and enrollment is available any time during employment. Participating employees may make annual pretax contributions to their accounts up to a maximum amount as limited by law. The 401(k) Plan requires the Company to make matching contributions of 3% on the first 3% of the employee's annual salary and 1% on the next 2% of the employee's annual salary as long as the employee participates in the 401(k) Plan. Both employee

contributions and Company contributions vest immediately. Employer contributions to the 401(k) Plan were $1,346, $1,141 and $988 for the years ended December 31, 2021, 2020 and 2019, respectively.

14. Commitments and Contingencies

Leases

The Company and Alachua Copeland Park Investments, LLC, a Florida limited liability company (as successor in interest to Ology Bioservices Holdings, LLC, a Delaware limited liability company, who was successor in interest to SNH Medical Office Properties Trust), are parties to a lease dated February 6, 2007, as amended (the "Primary Lease"). Pursuant to the Primary Lease, the Company leases an approximately 19,000 square foot corporate headquarters facility in Alachua, Florida. On July 13, 2021, the Company entered into a sixth amendment to the Primary Lease to extend the term of the Primary Lease to October 31, 2026. The Company recorded a right-of-use asset of $1,335 and a lease liability of $1,370 related to this extension.

The Company and Cousins Heights Union, LLC, a Georgia limited liability company (as successor in interest to Heights Union, LLC), are parties to a lease of75,000 square feet of office and lab space in Tampa, Florida (the "Heights Agreement"). Pursuant to the Heights Agreement, the Company uses the leased premises for general office, medical laboratory, training, and meeting purposes. In September 2020, the Company began occupying the space. The lease includes a $5,250 lessor allowance to be used towards the hard and soft costs of the tenant improvements and has been treated as an incentive. The Company incurred the cost of any tenant improvement in excess of this allowance. The Company concluded that it is the accounting owner of the tenant improvements and therefore, the lease incentive is accounted for as a reduction of the right-of-use asset and is recognized on the consolidated balance sheet separate from the right-of-use asset as leasehold improvements. The improvements will be amortized over the life of the lease, which was determined to be the shorter of the useful life of the improvements or the lease term. The Company determined the commencement date of the lease was August 28, 2020 and valued the lease using a 10.6% incremental borrowing rate. The Company recorded a right-of-use asset of $13,323 and a lease liability of $18,573 for this lease as of the commencement date.

On July 12, 2021, the Company entered into the first amendment (the "First Amendment") to the Heights Agreement. The First Amendment revises the commencement date of the Heights Agreement to mean October 30, 2020 and revises the termination date of the Heights Agreement to be October 31, 2034. Pursuant to the First Amendment, the Company was entitled to an additional 1.5 months of free rent periods.

The Company and Ja-Cole L.P. are parties to a lease dated April 21, 2015, as amended (the "Primary Lease"), and a lease dated October 1, 2020, pursuant to which the Company leases approximately 17,500 square feet in total (the "Burleson Facility") in Burleson, Texas. On January 27, 2022, the Company and Ja-Cole L.P. amended the Primary Lease for 15,000 square feet of the Burleson Facility to revise the commencement date of the lease to mean May 1, 2022 and the termination date of the lease to be April 30, 2027. The Burleson Facility houses raw material storage and product distribution while allowing same day order fulfillment for both the east and west coasts of the U.S.

On August 6, 2015, the Company entered into the CTS Agreement with Community Blood Center (doing business as Community Tissue Services) ("CTS"), in Dayton, Ohio, an FDA registered tissue establishment. Processing of the Avance Nerve Graft pursuant to the CTS Agreement began in February 2016. The CTS Agreement initially had a five-year term ending August 31, 2020. After three previous term extensions, on February 22, 2021, the CTS Agreement was further amended to extend the term of the agreement to December 31, 2023. Under the CTS Agreement, the Company pays CTS a facility fee for use of clean room/manufacturing, storage, and office space, which the Company accounts for as an embedded lease in accordance with Accounting Standards Codification 842, *Leases*.

The components of total lease expense for the years ended December 31, 2021, 2020 and 2019 were as follows:

(in thousands)	Year Ended December 31, 2021	2020	2019
Finance lease costs			
Amortization of right-of-use assets	$ 22	$ 22	$ 22
Interest on lease obligations	2	3	4
Operating lease costs			
Operating lease costs	4,326	2,777	1,910
Short-term lease costs	10	116	41
Variable lease costs	744	18	17
Total lease expense	$ 5,104	$ 2,936	$ 1,994

The short-term lease costs shown above reasonably reflect the Company's ongoing short-term lease commitments. No new short-term leases were entered into in 2021. The increase in variable lease costs is due to additional rent comprised primarily of operating costs related to the Tampa office and lab space.

Supplemental balance sheet information related to leases as of December 31, 2021 and 2020 was as follows:

(in thousands)	December 31, 2021	December 31, 2020
Operating Leases		
Operating lease right-of-use assets	$ 15,193	$ 15,614
Current maturities of long-term lease obligations	$ 1,825	$ 846
Long-term lease obligations	$ 20,794	$ 20,864
Finance Leases		
Finance lease right-of-use assets	$ 42	$ 64
Current maturities of long-term lease obligations	$ 9	$ 17
Long-term lease obligations	$ 4	$ 13

Other information related to leases was as follows ($ in thousands):

	Year Ended December 31, 2021	2020
Cash paid for amounts included in the measurement of operating lease obligations	$ 1,537	$ 1,913
Right-of-use assets obtained in exchange for new finance lease obligations	$ —	$ 16
Weighted-average remaining lease term - finance leases (in years)	2	2
Weighted-average remaining lease term - operating leases (in years)	12	12
Weighted-average discount rate - finance leases	7.23 %	7.28 %
Weighted-average discount rate - operating leases	10.32 %	9.44 %

The weighted-average discount rate for the majority of the Company's leases is based on the Company's estimated incremental borrowing rate since the rates implicit in the leases were not determinable. The Company's incremental borrowing rate is based on management's estimate of the rate of interest the Company would have to pay to borrow on a fully collateralized basis over a similar term and amount equal to the lease payments.

Future minimum lease payments under non-cancellable leases as of December 31, 2021 were as follows (in thousands):

Year ending December 31,	Operating Leases	Finance Leases
2022	$ 4,068	$ 10
2023	3,247	3
2024	3,013	—
2025	3,091	—
2026	3,097	—
Thereafter	23,935	—
Total future minimum lease payments	40,451	13
Less imputed interest on commenced leases	(17,832)	—
Total lease obligations	$ 22,619	$ 13

Service Agreements

The Company pays CTS a facility fee for the use of clean room/manufacturing, storage, and office space and for services in support of its manufacturing process including for routine sterilization of daily supplies, providing disposable supplies and microbial services, and office support. Pursuant to the CTS Agreement, the Company recorded expenses of $2,466, $1,739 and $2,148 for the years ended December 31, 2021, 2020 and 2019, respectively, in sales and marketing expenses. The CTS Agreement terminates December 31, 2023, subject to earlier termination by either party at any time for cause (subject to the non-terminating party's right to cure, in certain circumstances), or without cause upon 6 months prior notice.

In December 2011, the Company entered into a Master Services Agreement for Clinical Research and Related Services. The Company was required to pay $151 upon execution of this agreement and the remainder monthly based on activities associated with the execution of Axogen's phase 3 pivotal clinical trial to support the BLA for Avance Nerve Graft. Payments made under this agreement were $1,100, $1,136 and $1,056 for the years ended December 31, 2021, 2020 and 2019, respectively.

Distribution and Supply Agreements

In August 2008, the Company entered into an exclusive distribution agreement with Cook Biotech to distribute the Axoguard Nerve Connector and Axoguard Nerve Protector products worldwide and the parties subsequently amended the agreement on February 26, 2018. Pursuant to the February 2018 amendment, the agreement expires on June 30, 2027. The Cook Biotech agreement establishes a formula for the transfer cost of the Axoguard products and requires certain minimum purchases by the Company, although, through mutual agreement, the parties have not established such minimums; and, to date, have not enforced such provision. Under the Cook Biotech agreement, the Company provides purchase orders to Cook Biotech, and Cook Biotech fulfills the purchase orders. The agreement allows for termination provisions for both parties. The loss of the ability to sell the Axoguard products could have a material adverse effect on the Company's business until other replacement products would be available.

In June 2017, the Company entered into the Nerve End Cap Supply Agreement (the "Supply Agreement") with Cook Biotech whereby Cook Biotech is the exclusive contract manufacturer of the Axoguard Nerve Cap and both parties have provided the other party the necessary licenses to their technologies for operation of the Supply Agreement. The Supply Agreement expires on August 27, 2027. Under the Supply Agreement the Company provides purchase orders to Cook Biotech and Cook Biotech fulfills the purchase orders.

Axogen Processing Center Facility

The Company is highly dependent on the continued availability of its processing facilities at CTS in Dayton, Ohio and could be harmed if the physical infrastructure of this facility is unavailable for any prolonged period of time. In addition, disruptions could lead to significant costs and reductions in revenue, as well as potential harm to the Company's business reputation and financial results. In the event of disruption, the Company believes it can find and make operational a new leased facility in less than six months, but the regulatory process for approval of facilities is time-consuming and unpredictable. The Company's ability to rebuild or find acceptable lease facilities could take a considerable amount of time and expense and could cause a significant disruption in service to its customers. Although the Company has business interruption insurance, which would cover certain costs, it may not cover all costs nor help to regain the Company's standing in the market.

On July 31, 2018, the Company purchased the APC Facility in Vandalia, Ohio, located near the CTS processing facility where Avance Nerve Graft is currently processed. The APC Facility, when and if operational, will be the new processing facility for Avance Nerve Graft to provide continued capacity for growth and to support the transition of Avance Nerve Graft from a Human Cellular and Tissue-based Product pursuant to Section 361 of the Public Health Service Act to a biologic product. The APC Facility is comprised of a 107,000 square foot building on approximately 8.6 acres of land. The Company paid $731 for the land and this is recorded as land within property and equipment on the consolidated balance sheet. The Company paid $4,300 for the building and this is recorded in projects in process within property and equipment on the consolidated balance sheet.

On July 9, 2019, the Company entered into a Standard Form of Agreement Between Owner and Design-Builder (the "Design-Build Agreement") with CRB Builders, L.L.C., a Missouri limited liability company ("CRB"), pursuant to which CRB will renovate and retrofit the APC Facility. The Design-Build Agreement contains several design phase milestones that began in July 2019 and sets the date for Substantial Completion (as defined in the Design-Build Agreement) by late 2021, subject to adjustment in accordance with the terms of the Design-Build Agreement. The estimated cost pursuant to the Design-Build Agreement was $29,300. Additional costs associated with the renovation, validation and certification of the APC Facility are estimated to be $20,900, plus capitalized interest of $11,300. The Company temporarily deferred the construction as part of the cost containment initiatives implemented in the second quarter of 2020, and subsequently resumed construction in early January of 2021. For the year ended December 31, 2021, the Company has recorded $19,581 related to renovations and design and build in projects in progress. The Company has recorded $35,270 to date related to this project. In addition to these project costs, the Company has capitalized interest of $4,277 for the year ended December 31, 2021. To date, the Company has capitalized interest of $5,274 related to this project. These items are recorded as projects in process within property and equipment on the consolidated balance sheet. The Company anticipates spending $19,300, including projected capitalized interest of $6,100 in 2022 and an additional $1,700 in 2023. The Company anticipates that this building will be completed in early 2022, followed by a year-long process to validate and certify the facility by early 2023. The Company anticipates commencing tissue processing in the facility upon completion of the validation and certification process.

The Company obtained certain economic development grants from state and local authorities totaling up to $2,685 including $1,250 of cash grants to offset costs to acquire and develop the APC Facility. The economic development grants are subject to certain job creation milestones by 2023 and related contingencies. The Company received $950 and $238 from these grants in the years ended December 31, 2021 and 2020, respectively. These grants have claw back clauses if the Company does not meet these job creation milestones by 2023.

Fair Value of the Debt Derivative Liabilities

The fair value of the Debt Derivative Liabilities is $5,562 as of December 31, 2021. The fair value of the Debt Derivative Liabilities was determined using a probability-weighted expected return model based upon the four potential settlement scenarios for the Oberland Facility which are described in Note 3 - Summary of Significant Accounting Policies – Derivative Instruments. The estimated settlement value of each scenario, which includes any required make-whole payment (see "Note 10 - Long-Term Debt, Net of Financing Fees"), is then discounted to present value using a discount rate that is derived based upon the initial terms of the Oberland Facility at issuance and corroborated utilizing a synthetic rating analysis. The calculated fair values under the four scenarios are then compared to the fair value of a plain vanilla note, with the difference reflecting the fair value of the Debt Derivative Liabilities. The Company estimated the make-whole payments required under each scenario according to the terms of the Oberland Facility to generate an internal rate of return equal to 11.5% through the scheduled maturity dates, less the total of all quarterly interest and royalty payments previously paid to Oberland Capital. The calculation utilized the XIRR function in Microsoft Excel as required by the Oberland Facility. If the debt is not prepaid but instead is held to its scheduled maturities, the Company's estimate of the make-whole payment for the first tranche of the Oberland Facility is $68 on June 30, 2027, and the Company's estimate of the make-whole payment for the second tranche of the Oberland Facility is zero on June 30, 2028. The Company has consistently applied this approach since the inception of the debt agreement on June 30, 2020.

The Company has become aware that Oberland Capital may have an alternative interpretation of the calculation of the make-whole payments that the Company believes does not properly utilize the same methodology utilized by the XIRR function in Microsoft Excel as described in the Oberland Facility. The Company estimates the top end of the range of the make-whole payments if the debt is held to scheduled maturity under an alternative interpretation to be approximately $13,000 for the first tranche of the Oberland Facility on June 30, 2027, and approximately $5,000 for the second tranche of the Oberland Facility on June 30, 2028. Further, if the debt is prepaid prior to the scheduled maturity dates and subject to the alternative interpretation, the make-whole payment would be larger than the amounts herein.

Other Commitments

Certain executive officers of the Company are parties to employment contracts. Such contracts have severance payments for certain conditions including change of control.

Legal Proceedings

The Company is subject to various claims, lawsuits, and proceedings in the ordinary course of the Company's business, some of which have been dismissed by the Company. In the opinion of management, such claims are either adequately covered by insurance or otherwise indemnified, or are not expected, individually or in the aggregate, to result in a material, adverse effect on the Company's financial condition. However, it is possible that the Company's results of operations, financial position and cash flows in a particular period could be materially affected by these contingencies.

On January 9, 2019, Plaintiff Neil Einhorn, on behalf of himself and others similarly situated, filed a putative class action complaint in the United States District Court for the Middle District of Florida alleging violations of the federal securities laws against Axogen, Inc., certain of its directors and officers ("Individual Defendants"), and Axogen's 2017 Offering Underwriters and 2018 Offering Underwriters (collectively, with the Individual Defendants, the "Defendants"), captioned Einhorn v. Axogen, Inc., et al., No. 8:19-cv-00069 (M.D. Fla.). Plaintiff asserts that Defendants made false or misleading statements in connection with the Company's November 2017 registration statement issued regarding its secondary public offering in November 2017 and May 2018 registration statement issued regarding its secondary public offering in May 2018, and during a class period of August 7, 2017 to December 18, 2018. In particular, Plaintiff asserts that Defendants issued false and misleading statements and failed to disclose to investors: (1) that the Company aggressively increased prices to mask lower sales; (2) that the Company's pricing alienated customers and threatened the Company's future growth; (3) that ambulatory surgery centers form a significant part of the market for the Company's products; (4) that such centers were especially sensitive to price increases; (5) that the Company was dependent on a small number of surgeons whom the Company paid to generate sales; (6) that the Company's consignment model for inventory was reasonably likely to lead to channel stuffing; (7) that the Company offered purchase incentives to sales representatives to encourage channel stuffing; (8) that the Company's sales representatives were encouraged to backdate revenue to artificially inflate metrics; (9) that the Company lacked adequate internal controls to prevent such channel stuffing and backdating of revenue; (10) that the Company's key operating metrics, such as the number of active accounts, were overstated; and (11) that, as a result of the foregoing, Defendants' positive statements about the Company's business, operations, and prospects, were materially misleading and/or lacked a reasonable basis. Axogen was served on January 15, 2019. On February 4, 2019, the Court granted the parties' stipulated motion which provided that Axogen is not required to file a response to the complaint until thirty days after Plaintiff files a consolidated amended complaint. On June 19, 2019, Plaintiff filed an Amended Class Action Complaint, and on July 22, 2019, Defendants filed a motion to dismiss. Plaintiff filed opposing papers on August 12, 2019. The Court held a status hearing on September 11, 2019 and stayed all deadlines regarding the parties' obligations to file a case management report. On December 4, 2019, the parties presented oral arguments. On April 21, 2020, the Court dismissed the complaint without prejudice, finding the Plaintiff failed to state a claim upon which relief could be granted. The Plaintiff filed a Second Amended Class Action Complaint on June 22, 2020. Axogen filed a motion to dismiss on August 6, 2020. The Plaintiff filed an opposition on September 20, 2020. The Court held oral argument on February 25, 2021. On March 19, 2021, the Court dismissed the Second Amended Complaint with prejudice, finding again that the Plaintiff failed to state a claim upon which relief could be granted. On April 14, 2021, Plaintiff filed a notice of appeal. Plaintiff filed its opening brief on June 28, 2021. The Company filed its appellee brief on August 11, 2021. The Plaintiff filed a reply brief on September 14, 2021. The Eleventh Circuit has scheduled oral argument for March 8, 2022. The amount of loss, if any, cannot be reasonably estimated at this time. This matter is subject to various uncertainties and it is possible that it may be resolved unfavorably to the Company. However, while it is not possible to predict with certainty the outcome of the matter, the Company and the Individual Defendants dispute the allegations and intend to vigorously defend themselves.

Bach v. Zaderej, et al., 27-cv-20-5997 (Hennepin Cnty., Minn.). On April 21, 2020, Plaintiff Michael Bach, derivatively on behalf of Axogen, filed a verified stockholder derivative complaint for breach of fiduciary duty, insider selling, corporate waste and unjust enrichment against Karen Zaderej, Gregory G. Freitag, Peter J. Mariani, Amy Wendell, Robert J. Rudelius, Mark Gold, Guido Neels, Jamie M. Grooms, Quentin S. Blackford, and Alan M. Levine (the "Individual Defendants") and Nominal Defendant Axogen, Inc. ("Axogen") (collectively, "Defendants"). The Bach Complaint was never served on Defendants and therefore no response was necessary. On November 14, 2021, Plaintiff Michael Bach filed a voluntary notice of dismissal without prejudice against all Defendants.

15. Subsequent Event

On January 27, 2022, the Company entered into an amendment to the April 21, 2015, as amended, lease with Ja-Cole, L.P. forl5,000 square feet of the Burleson Facility. The amendment revises the commencement date of the lease to mean May 1, 2022 and the termination date of the lease to be April 30, 2027.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain "disclosure controls and procedures" as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that are designed to ensure that information required to be disclosed by us in reports we file or submit 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 principal executive officer and principal financial officer, and Board of Directors, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognizes that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable assurance of achieving the desired objectives, and we necessarily are required to apply our judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures.

Our management, including our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2021 and concluded that our disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the three months ended December 31, 2021 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting (as defined in Rules 13a-15(d) or 15d-15(f) of the Exchange Act).

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. The Company's internal control system is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with US GAAP and includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the consolidated financial statements.

Because of inherent limitations, a system of internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate due to a change in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management, including our principal executive officer and principal financial officer, evaluated the effectiveness of the design and operation of our internal control over financial reporting as of December 31, 2021. In making this assessment, the Company's management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control-Integrated Framework (2013). Based on their evaluation, the principal executive officer and principal financial officer concluded that our internal controls over financial reporting were effective.

The Company's independent registered public accounting firm, Deloitte & Touche LLP, who audited the consolidated financial statements included in this Annual Report on Form 10-K, has issued an attestation report on the effectiveness of management's internal control over financial reporting as of December 31, 2021.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

Information required by this item concerning our directors will be set forth under the caption “Election of Directors” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

If applicable, information required by this item concerning compliance with Section 16(a) of the Exchange Act, as amended, will be set forth under the caption "Security Ownership of Certain Beneficial Owners and Management — Delinquent Section 16(a) Reports” in our definitive proxy statement for our 2022 annual meeting, and is incorporated herein by reference.

Information required by this item concerning the audit committee of the Company, the audit committee financial expert of the Company and any material changes to the way in which security holders may recommend nominees to the Company’s Board of Directors will be set forth under the caption “Corporate Governance” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

The Board of Directors adopted a Code of Business Conduct and Ethics, which is posted on our website https://ir.axogeninc.com/governance-docs that is applicable to all employees and directors. We will provide copies of our Code of Business Conduct and Ethics without charge upon request. To obtain a copy, please visit our website or send your written request to Investors Relations, 13631 Progress Blvd., Suite 400, Alachua, FL 32615. With respect to any amendments or waivers of this Code of Business Conduct and Ethics (to the extent applicable to our chief executive officer, principal accounting officer or controller, or persons performing similar functions) we intend to either post such amendments or waivers on our website or disclose such amendments or waivers pursuant to a Current Report on Form 8-K.

ITEM 11. EXECUTIVE COMPENSATION.

Information required by this item will be set forth under the caption “Executive Compensation” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information required by this item concerning ownership will be set forth under the caption “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE.

Information required by this item concerning ownership will be set forth under the caption “Corporate Governance — Director Independence” and “Certain Relationships and Related Transactions” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES.

Information required by this item concerning ownership will be set forth under the caption “Ratification of Appointment of Independent Registered Public Accounting Firm” in our definitive proxy statement for our 2022 annual meeting and is incorporated herein by reference.

PART IV

Schedule II – Valuation and Qualifying Accounts

AXOGEN, INC.
SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS
THREE YEARS ENDED DECEMBER 31, 2021, 2020 AND 2019

(in thousands)	Balance at Beginning of Year	Additions	Deductions (Charge-offs)	Balance at End of Year
Allowance for doubtful accounts				
2019	$ 1,117	$ 514	$ (539)	$ 1,092
2020	$ 1,092	$ —	$ (676)	$ 416
2021	$ 416	$ —	$ (140)	$ 276
Valuation allowance for deferred tax assets				
2019	$ 33,876	$ 6,056	$ —	$ 39,932
2020	$ 39,932	$ 6,585	$ —	$ 46,517
2021	$ 46,517	$ 6,734	$ —	$ 53,251

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) **Financial Statements and Financial Statement Schedules**

The financial statements required by Item 15(a) are filed in Item 8 of this Annual Report on Form 10-K. Schedules not included have been omitted because they are not applicable or because the required information is included in the Consolidated Financial Statements and notes thereto.

(b) **Exhibits**

The following exhibits are included in this Annual Report on Form 10-K or incorporated by reference in the Form 10-K.

Exhibit Number	Description
3.1	Amended and Restated Articles of Incorporation of Axogen, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q, filed on November 6, 2019).
3.2	Axogen, Inc. Amended and Restated Bylaws. (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K, filed on May 2, 2019).
4.1	Description of Securities of Axogen, Inc. (incorporated by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019, filed on February 24, 2020).
4.2	Registration Rights Agreement, dated as of August 26, 2015, between Axogen, Inc. and Essex Woodlands Fund IX, L.P. (incorporated by reference to Exhibit 4.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017)
*10.1	Patent License Agreement, dated as of August 3, 2005, by and between Axogen Corporation and the Board of Regents of the University of Texas System (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 6, 2011).
*10.2.1	Amended and Restated Standard Exclusive License Agreement with Sublicensing Terms, dated as of February 21, 2006, by and between Axogen Corporation and the University of Florida Research Foundation, Inc. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on October 6, 2011).
10.2.2	Second Amendment to the Amended and Restated Standard Exclusive License Agreement No. A5140, effective as of July 5, 2016, by and between Axogen Corporation and the University of Florida Research Foundation, Inc. (incorporated by reference to Exhibit 10.2.1 to the Company's Current Report on Form 8-K filed on July 11, 2016).
*10.3	Sid Martin Biotechnology Development Institute Incubator License Agreement, dated as of September 26, 2006, by and between Axogen, Inc. and the University of Florida Research Foundation, Inc. (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on October 6, 2011).
*10.4.1	Amended and Restated Nerve Tissue Processing Agreement, dated as of February 27, 2008, by and between Axogen Corporation and LifeNet Health (incorporated by reference to Exhibit 10.4.1 to the Company's Current Report on Form 8-K filed on October 6, 2011).
*10.4.2	Second Amendment to Amended and Restated Nerve Tissue Processing Agreement, dated as of August 9, 2011, by and between Axogen Corporation and LifeNet Health (incorporated by reference to Exhibit 10.4.2 to the Company's Current Report on Form 8-K filed on October 6, 2011).
*10.4.3	Third Amendment to Amended and Restated Nerve Tissue Processing Agreement, dated as of March 12, 2012, by and between Axogen Corporation and LifeNet Health (incorporated by reference to Exhibit 10.4.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 2011, filed on March 15, 2012).
*10.4.4	Fourth Amendment to Amended and Restated Nerve Tissue Processing Agreement, dated as of September 8, 2014, by and between Axogen Corporation and LifeNet Health (incorporated by reference to Exhibit 10.4.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed on November 13, 2014).

Exhibit Number	Description
*10.5.1	Distribution Agreement, dated as of August 27, 2008, by and between Axogen, Inc. and Cook Biotech Incorporated (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on October 6, 2011).
10.5.2	Amendment No. 1 to Distribution Agreement, dated as of February 24, 2012, by and between Axogen, Inc. and Cook Biotech Incorporated (incorporated by reference to Exhibit 10.5.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2011, filed on March 15, 2012).
10.5.3	Amendment No. 2 to Distribution Agreement, dated as of February 26, 2018, by and between Axogen, Inc. and Cook Biotech Incorporated (incorporated by reference to Exhibit 10.5.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
10.6.1	Lease dated as of February 6, 2007, by and between Axogen Corporation and WIGSHAW, LLC (incorporated by reference to Exhibit 10.10 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2011, filed on November 14, 2011).
10.6.2	Amendment dated February 27, 2012 to lease dated as of February 6, 2007, by and between Axogen Corporation and WIGSHAW, LLC, its successors and assigns (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the year ended December 31, 2011, filed on March 15, 2012).
10.6.3	Second Amendment to Lease, dated as of February 27, 2013 to lease dated as of February 6, 2007, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012, filed on March 12, 2013).
10.6.4	Third Amendment to Lease, dated November 12, 2013 to lease dated as of February 6, 2007, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.10.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, filed on March 6, 2014).
10.6.5	Fourth Amendment to Lease, dated as of March 16, 2016, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.10.4 to the Company's Current Report on Form 8-K filed on March 18, 2016).
10.6.6	Fifth Amendment to Lease, dated as of November 30, 2020, by and between AxoGen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.9.5 to the Company's Current Report on Form 8-K, filed on December 4, 2020).
10.6.7	Sixth Amendment to Lease, dated as of July 13, 2021, by and between Axogen Corporation and Ology Bioservices Holdings, LLC (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, filed on July 16, 2021).
10.6.8	Current Premises Election Notice, dated as of April 10, 2018, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 13, 2018).
10.6.9	Letter Agreement effective September 20, 2018 by between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on September 21, 2018).

Exhibit Number	Description
**10.7	Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Appendix A to the Company's Proxy Statement filed on April 8, 2016).
**10.8.1	Form of Employee Incentive Stock Option Agreement (incorporated by reference to Exhibit 99.2 to the Company's Current Report on Form 8-K filed on September 26, 2007).
**10.8.2	Amended Form of Employee Incentive Stock Option Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Exhibit 10.10.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
**10.9.1	Executive Employment Agreement, effective as of October 1, 2011, by and between Axogen, Inc. and Gregory Freitag (incorporated by reference to Exhibit 10.21 to the Company's Annual Report on Form 10-K for the year ended December 31, 2011, filed on March 15, 2012).
**10.9.2	Amendment No. 1 to Executive Employment Agreement, dated as of May 11, 2014, by and between Axogen, Inc. and Greg Freitag (incorporated by reference to Exhibit 10.16.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016, filed on August 4, 2014).
**10.9.3	Amendment No. 2 to Employment Agreement, dated as of August 6, 2015, by and between Gregory G. Freitag and Axogen, Inc. (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, filed on November 5, 2015).
**10.9.4	Amendment No. 3 to Employment Agreement, dated as of June 1, 2016, by and between Greg Freitag and Axogen, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 31, 2016).
**10.9.5	Amendment No. 4 to Employment Agreement, dated as of October 29, 2018, by and between Greg Freitag and Axogen, Inc. (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on October 29, 2018).
**10.9.6	Amendment No. 5 to Employment Agreement, dated as of June 1, 2020, by and between Greg Freitag and Axogen, Inc. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, filed on June 1, 2020).
10.10.1	Commercial Lease, dated April 21, 2015, by and between Axogen Corporation and Ja-Cole, L.P. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 22, 2015).
10.10.2	Addendum to Commercial Lease, dated April 21, 2015 by and between Axogen Corporation and Ja-Cole, L.P. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on April 22, 2015).
10.10.3	Commercial Lease Amendment 2, dated as of October 25, 2016, by and between Axogen Corporation and Ja-Cole L.P. (incorporated by reference to Exhibit 10.2.1 to the Company's Current Report on Form 8-K filed on October 31, 2016).
10.10.4	Commercial Lease Amendment 3, dated November 21, 2018 by and between Ja-Cole L.P. and Axogen Corporation (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 26, 2018).

Exhibit Number	Description
10.10.5	Commercial Lease Amendment 4, dated March 12, 2019, by and between Ja-Cole L.P. and Axogen Corporation (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, filed on May 8, 2019).
10.10.6	Commercial Lease Amendment, dated as of January 27, 2022, by and between Ja-Cole L.P. and Axogen Corporation (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 31, 2022).
10.11.1	License and Services Agreement, dated as of August 6, 2015, by and between Axogen Corporation and Community Blood Center (d/b/a Community Tissue Services) (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, filed on November 5, 2015).
10.11.2	Fourth Amendment to License and Services Agreement, dated as of February 22, 2019, by and between Axogen Corporation and Community Blood Center (d/b/a Community Tissue Services). (incorporated by reference to Exhibit 10.13.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 26, 2019)
10.11.3	Seventh Amendment to License and Services Agreement, dated as of February 22, 2021, by and between Axogen Corporation and Community Blood Center (d/b/a Community Tissue Services) (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on February 26, 2021).
10.13	Securities Purchase Agreement, dated as of August 26, 2015, between Axogen, Inc. and Essex Woodlands Fund IX, L.P. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, filed on November 5, 2015).
10.14	Development, License & Option Agreement, dated as of November 3, 2014, by and between Axogen Corporation and Sensory Management Services LLC (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, filed on November 5, 2015).
**10.15	Executive Employment Agreement, dated as of March 11, 2016, by and between Axogen Corporation and Kevin Leach (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 14, 2016).
10.16	Form of Non-Incentive Stock Option Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Exhibit 10.22 to the Company's annual report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
*10.17	Form of Performance Stock Unit Award Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of May 26, 2016 (incorporated by reference to Exhibit 10.23 to the Company's annual report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
**10.18	Retention Stock Unit Award Agreement, dated December 29, 2016, by and between Axogen, Inc. and Karen Zaderej, pursuant to Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Exhibit 10.24 to the Company's annual report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
10.19	Lease, dated as of January 23, 2017, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 26, 2017).

Exhibit Number	Description
**10.20	Form of 2018 Performance Stock Unit Award Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Exhibit 10.26 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed on March 1, 2018).
**10.21	Form of Restricted Stock Unit Award Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of March 23, 2016 (incorporated by reference to Exhibit 10.28 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 1, 2017).
10.22	Current Premises Election Notice, dated as of April 10, 2018, by and between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 13, 2018).
10.23	Agreement For Purchase and Sale of Real Property, dated as of June 8, 2018 by and between ARC CRVANOH001, LLC and Axogen Corporation, (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 12, 2018).
10.24	Letter Agreement effective September 20, 2018 by between Axogen Corporation and SNH Medical Office Properties Trust (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on September 21, 2018).
10.25.1	Office Lease dated September 20, 2018 by and between Axogen, Inc., Axogen Corporation and Heights Union, LLC (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on September 21, 2018).
10.25.2	First Amendment to Office Lease, dated as of July 12, 2021, by and among Axogen, Inc,. Axogen Corporation, and Heights Union I, LLC (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on July 16, 2021).
**10.26	Form of Incentive Stock Option Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of October 29, 2018 (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on October 29, 2018).
**10.27	Form of Restricted Stock Unit Award Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of October 29, 2018 (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on October 29, 2018).
10.28	Axogen, Inc. 2017 Employee Stock Purchase Plan (incorporated by reference to Appendix B to the Company's Proxy Statement filed on April 7, 2017).
10.29	Lease, dated November 19, 2018 by and between SNH Medical Office Properties Trust and Axogen Corporation (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on November 26, 2018).
10.30.1	Lease, dated November 19, 2018 by and between SNH Medical Office Properties Trust and Axogen Corporation (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on November 26, 2018).
10.30.2	First Amendment to Lease dated as of November 19, 2018 by and between SNH Medical Office Properties Trust and Axogen Corporation (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on November 26, 2018).

Exhibit Number	Description
**10.33	Form of Non-Qualified Stock Option Inducement Award Agreement to be granted by Axogen, Inc. to Eric Sandberg on January 22, 2019 (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on January 22, 2019).
**10.34	Form of Performance Stock Unit Award Agreement pursuant to the Axogen, Inc. 2010 Stock Incentive Plan, as amended and restated as of April 5, 2017 (incorporated by reference to Exhibit 10.47 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 26, 2019).
10.35	Standard Form of Agreement Between Owner and Design-Builder, dated as of July 9, 2019, by and between Axogen Corporation and CRB Builders, L.L.C. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on July 9, 2019).
**10.36	Axogen Inc. 2019 Long-Term Incentive Plan and forms of award notices and agreements thereunder (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2019, filed on November 6, 2019).
***10.37	Nerve End Cap Supply Agreement, dated June 27, 2017, by and between Cook Biotech Incorporated and Axogen Corporation (incorporated by reference to Exhibit 10.51 to the Company's Annual Report on Form 10-K, filed on February 24, 2020).
10.38	Term Loan Agreement, dated June 30, 2020, among Axogen, Inc., Axogen Corporation, AxoGen Processing Corporation, TPC Investments II LP and Argo SA LLC. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on July 1, 2020).
10.39	Security Agreement, dated June 30, 2020, among Axogen, Inc., Axogen Corporation, AxoGen Processing Corporation, and Argo SA LLC. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, filed on July 1, 2020).
10.4	Revenue Participation Agreement, dated June 30, 2020, between Axogen, Inc. and Argo SA LLC. (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K, filed on July 1, 2020).
10.41	Option Agreement, dated June 30, 2020, between Axogen, Inc. and TPC Investments II LP. (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K, filed on July 1, 2020).
**10.42	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Karen Zaderej (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on October 29, 2020).
**10.43	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Peter Mariani (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, filed on October 29, 2020).
**10.44	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Eric Sandberg (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K, filed on October 29, 2020).
**10.45	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Maria Martinez (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K, filed on October 29, 2020).

Exhibit Number	Description
**10.46	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Isabelle Billet (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K, filed on October 29, 2020).
**10.47	Amended and Restated Employment Agreement, dated November 1, 2020, by and between Axogen Corporation and Bradley Ottinger (incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K, filed on October 29, 2020).
**10.48	Second Amended and Restated Employment Agreement, dated January 4, 2021, by and between Axogen Corporation and Angelo Scopelianos (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on January 6, 2021).
10.49	Commercial Lease, dated October 1, 2020, by and between Axogen Corporation and Ja-Cole, L.P (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed on October 30, 2020.
21.1	Subsidiaries of the Registrant.
23.1	Consent of Deloitte & Touche, LLP.
++24.1	Power of Attorney.
31.1	Certification of Principal Executive Officer.
31.2	Certification of Principal Financial Officer.
+++32.1	Chief Executive Officer and Chief Financial Officer Certifications pursuant to 18 U.S.C. 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002.
101	Inline XBRL Document Set for the consolidated financial statements and accompanying notes in Part II, Item 8, "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.
+101.INS	XBRL Instance Document – The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL 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 Extension Labels Linkbase.
+101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.

Exhibit Number	Description
104	Inline XBRL for the cover page of this Annual Report on Form 10-K, included in the Exhibit 101 Inline XBRL Document Set.

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* Confidential treatment has been granted for portions of this Exhibit pursuant to Rule 24b-2 under the Securities Exchange Act of 1934 as amended. The confidential portions have been deleted and filed separately with the U.S. Securities and Exchange Commission.

** Management contract or compensatory plan or arrangement.

*** Confidential treatment has been requested as to certain portions, which portions have been omitted and filed separately with the Securities and Exchange Commission.

\+ Filed herewith.

++ Included on signature page.

+++ Furnished herewith.

ITEM 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

AXOGEN, INC

/s/ Karen Zaderej
Karen Zaderej
Chief Executive Officer, President and Chairman of the Board
February 25, 2022

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Karen Zaderej (with full power to act alone), as his or her true and lawful attorney-in-fact and agent, with full powers of substitution and re-substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to the Annual Report on Form 10-K of Axogen, Inc., and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or their substitute or substitutes, lawfully do or cause to be done by virtue hereof.

In accordance with the Exchange Act, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Karen Zaderej Karen Zaderej, Chief Executive Officer, President and Chairman of the Board (Principal Executive Officer)	February 25, 2022
/s/ Peter J. Mariani Peter J. Mariani, Executive Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	February 25, 2022
/s/ Quentin S. Blackford Quentin S. Blackford Director	February 25, 2022
/s/ Gregory G. Freitag Gregory G. Freitag Director	February 25, 2022
/s/ Dr. Mark Gold Mark Gold, M.D. Director	February 25, 2022
/s/ John H. Johnson John H. Johnson Director	February 25, 2022
/s/ Alan M. Levine Alan M. Levine Director	February 25, 2022
/s/ Guido J. Neels Guido J. Neels Director	February 25, 2022
/s/ Paul G. Thomas Paul G. Thomas Director	February 25, 2022
/s/ Amy Wendell Amy Wendell Director	February 25, 2022

Exhibit 21.1

SUBSIDIARIES OF AXOGEN, INC.

As of December 31, 2021, Axogen, Inc. had three sole subsidiaries:

1. Axogen Corporation, a Delaware corporation;
2. Axogen Europe GmbH, an Austrian corporation; and
3. Axogen Processing Corporation, a Delaware corporation.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-220770, 333-224713 and 333-255807 on Form S-3 and Registration Statement Nos. 333-173539, 333-177980, 333-201238, 333-211660, 333-218290, 333-230418, 333-233416, 333-222019 and 333-255992 on Form S-8 of our report dated February 25, 2022, relating to the financial statements of Axogen, Inc., and the effectiveness of Axogen, Inc.'s internal control over financial reporting appearing in this Annual Report on Form 10-K for the year ended December 31, 2021.

/s/ DELOITTE & TOUCHE LLP

Miami, Florida
February 25, 2022

EXHIBIT 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Karen Zaderej, certify that:

1. I have reviewed this Annual Report on Form 10-K of Axogen, 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: February 25, 2022

/s/ Karen Zaderej

Karen Zaderej
Chief Executive Officer, President and
Chairman of the Board

EXHIBIT 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Peter J. Mariani, certify that:

1. I have reviewed this Annual Report on Form 10-K of Axogen, 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: February 25, 2022

/s/ Peter J. Mariani

Peter J. Mariani

Executive Vice President and Chief Financial Officer

EXHIBIT 32

CERTIFICATION PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002 (SUBSECTIONS (A) AND (B) OF SECTION 1350, CHAPTER 63 OF TITLE 18, UNITED STATES CODE)

In connection with the Annual Report on Form 10-K (the "Report") of Axogen, Inc. (the "Company"), Karen Zaderej, Chief Executive Officer and President of the Company and Peter J. Mariani, Executive Vice President and Chief Financial Officer of the Company, each certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of her/his knowledge that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 25, 2022

/s/ Karen Zaderej

Karen Zaderej
Chief Executive Officer, President and Chairman of the Board
(Principal Executive Officer)

/s/ Peter J. Mariani

Peter J. Mariani
Executive Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)