Filed Pursuant to Rule 424(b)(4)
Registration No. 333-269475

PROSPECTUS

SINTX TECHNOLOGIES, INC.

1,980,000 Units, Each Unit Consisting of One Share of Common Stock, One Class C Warrant to Purchase One Share of Common Stock, and One-Half of One Class D Warrant, Each Whole Class D Warrant to Purchase One Share of Common Stock

170,000 Units, Each Unit Consisting of One Pre-Funded Warrant, One Class C Warrant to Purchase One Share of Common Stock, and One-Half of One Class D Warrant, Each Whole Class D Warrant to Purchase One Share of Common Stock

86,000 Placement Agent Warrants to Purchase an Aggregate of Up To 86,000 Shares of Common Stock

Up to 3,481,000 Shares of Common Stock Issuable upon the Exercise of the Class C Warrants, Class D Warrants, Pre-Funded Warrants, and Placement Agent Warrants

We are offering on a best-efforts basis up to 2,150,000 Units (the "Units"), each consisting of one share of common stock, one Class C Warrant to purchase one share of common stock (the "Class C Warrants"), and one-half of one Class D Warrant, each whole Class D Warrant to purchase one share of common stock (the "Class D Warrants" and together with the Class C Warrants, the "Warrants"), at a public offering price of $5.60 per Unit.

Each Class C Warrant will be immediately exercisable for one share of common stock at an exercise price of $5.60 per share and expire five years after the issuance date. Each whole Class D Warrant will be immediately exercisable for one share of common stock at an exercise of $5.60 per share and expire three years after the issuance date.

We are also offering to each purchaser of Units that would otherwise result in the purchaser's beneficial ownership exceeding 4.99% of our outstanding shares of common stock immediately following the consummation of this offering the opportunity to purchase Units consisting of one pre-funded warrant (in lieu of one share of common stock), one Class C Warrant, and one-half of one Class D Warrant. A holder of pre-funded warrants will not have the right to exercise any portion of its pre-funded warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, such limit may be increased to up to 9.99%) of the number of shares of common stock outstanding immediately after giving effect to such exercise. Each pre-funded warrant will be exercisable for one share of common stock. The purchase price of each Unit including a pre-funded warrant will be equal to the price per Unit including one share of common stock, minus $0.0001, and the remaining exercise price of each pre-funded warrant will equal $0.0001 per share. The pre-funded warrants will be immediately exercisable (subject to the beneficial ownership cap) and may be exercised at any time until all of the pre-funded warrants are exercised in full. For each Unit including a pre-funded warrant we sell (without regard to any limitation on exercise set forth therein), the number of Units including a share of common stock we are offering will be decreased on a one-for-one basis. The shares of common stock and pre-funded warrants, if any, can each be purchased in this offering only with the accompanying Warrants as part of a Unit, but the components of the Units will immediately separate upon issuance. See "Description of Securities Included in this Offering" in this prospectus for more information.

We are also registering the shares of common stock issuable from time to time upon the exercise of the Class C Warrants, Class D Warrants, and pre-funded warrants included in the Units offered hereby. We are also registering the shares of common stock issuable from time to time upon the exercise of the placement agent's warrants.

Our Common Stock is listed on the Nasdaq Capital Market, or Nasdaq, under the symbol "SINT." On February 8, 2023, the last reported sale price of our Common Stock was $3.34 per share. There is no established public trading market for the Warrants or the pre-funded warrants. We do not intend to apply for listing of the Warrants or pre-funded warrants on any securities exchange or recognized trading system.

There is no established public trading market for the Warrants and we do not expect markets to develop. Without an active trading market, the liquidity of the Warrants will be limited.

The Units will be offered at a fixed price and are expected to be issued in a single closing. We expect this offering to be completed not later than two business days following the commencement of this offering and we will deliver all securities to be issued in connection with this offering delivery versus payment/receipt versus payment upon receipt of investor funds received by us. Accordingly, neither we nor the placement agent have made any arrangements to place investor funds in an escrow account or trust account since the placement agent will not receive investor funds in connection with the sale of the securities offered hereunder.

We have engaged Maxim Group LLC as our exclusive placement agent ("Maxim" or the "placement agent") to use its reasonable best efforts to solicit offers to purchase our securities in this offering. The placement agent is not purchasing or selling any of the securities we are offering and is not required to arrange for the purchase or sale of any specific number or dollar amount of the securities. Because there is no minimum offering amount required as a condition to closing in this offering the actual public offering amount, placement agent's fee, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above and throughout this prospectus. We have agreed to pay the placement agent the placement agent fees set forth in the table below. See "Plan of Distribution" in this prospectus for more information.

	Per Unit Including Common Stock	Per Unit Include Pre-Funded Warrant	Total
Public offering price	$ 5.60	$ 5.5999	$ 12,039,983
Placement Agent fees[(1)]	$ 0.392	$ 0.3920	$ 842,799
Proceeds, before expenses, to us	$ 5.208	$ 5.2079	$ 11,197,184

(1) In connection with this Offering, we have agreed to pay to Maxim as placement agent a cash fee equal to 7% of the gross proceeds received by us in the Offering. We have also agreed to provide Maxim up to $100,000 for reimbursement of accountable expenses in connection with its engagement as placement agent and to grant Maxim warrants to purchase a number of shares of common stock equal to 4% of the total number of Units being sold in the Offering. See "Plan of Distribution."

The above summary of offering proceeds to us does not give effect to any exercise of the Warrants being issued in this offering.

Investing in our securities involves a high degree of risk. See the section entitled "Risk Factors" beginning on page 9 of the prospectus. You should carefully consider these risk factors, as well as the information contained in this prospectus, before you invest.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

Maxim Group LLC

The date of this prospectus is February 7, 2023

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ABOUT THIS PROSPECTUS

The registration statement of which this prospectus forms a part that we have filed with the Securities and Exchange Commission, or SEC, includes exhibits that provide more detail of the matters discussed in this prospectus. You should read this prospectus and the related exhibits filed with the SEC before making your investment decision.

You should rely only on the information provided in this prospectus or in a prospectus supplement or any free writing prospectuses or amendments thereto. Neither we nor the placement agent have authorized anyone else to provide you with different information. We do not, and the placement agent and its affiliates do not, take any responsibility for, and can provide no assurance as to the reliability of, any information that others may provide to you. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information in this prospectus is accurate only as of the date hereof, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

We are not, and the placement agent is not, offering to sell or seeking offers to purchase these securities in any jurisdiction where the offer or sale is not permitted. We and the placement agent have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities as to distribution of the prospectus outside of the United States.

Unless the context otherwise requires, references in this prospectus to "SINTX," "the Company," "we," "us" and "our" refer to SINTX Technologies, Inc. and our subsidiaries. Solely for convenience, trademarks and tradenames referred to in this prospectus may appear without the ® or ™ symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these trademarks and tradenames.

Unless the context otherwise requires, references in this prospectus to shares of our Common Stock, including prices per share of our Common Stock, and also the exercise prices of outstanding warrants, reflect the 1-for-100 reverse stock split effective as of December 20, 2022.

PROSPECTUS SUMMARY

This summary contains basic information about us and this offering. Because it is a summary, it does not contain all of the information that you should consider before investing. Before you decide to invest in our Units, you should read this entire prospectus carefully, including the section entitled "Risk Factors" and any information incorporated by reference herein.

Company Overview

SINTX Technologies is a 26-year-old advanced ceramics company formed in December 1996, focused on providing solutions in a variety of biomedical, technical, and antipathogenic applications. We have grown from focusing primarily on the research, development and commercialization of medical devices manufactured with silicon nitride to becoming an advanced ceramics company engaged in diverse fields, including biomedical, technical and antipathogenic applications. This diversification enables us to focus on our core competencies which are the manufacturing, research, and development of products comprised from advanced ceramic materials for external partners. We seek to connect with new customers, partners and manufacturers to help them realize the goal of leveraging our expertise in advanced ceramics to create new, innovative products across these sectors.

SINTX Core Business

Biomedical Applications: Since its inception, SINTX has been focused on medical grade silicon nitride. SINTX biomedical products have been shown to be biocompatible, bioactive, antipathogenic, and to have superb bone affinity. Spinal implants made from SINTX silicon nitride have been successfully implanted in humans since 2008 in the US, Europe, Brazil, and Taiwan. This established use, along with its inherent resistance to bacterial adhesion and bone affinity suggests that it may also be suitable in other fusion device applications such as arthroplasty implants, foot wedges, and dental implants. Bacterial infection of any biomaterial implants is always a concern. SINTX silicon nitride has been shown to be resistant to bacterial colonization and biofilm formation, making it antibacterial. SINTX silicon nitride products can be polished to a smooth and wear-resistant surface for articulating applications, such as bearings for hip and knee replacements.

We believe that silicon nitride has a superb combination of properties that make it suited for long-term human implantation. Other biomaterials are based on bone grafts, metal alloys, and polymers- all of which have well-known practical limitations and disadvantages. In contrast, silicon nitride has a legacy of success in the most demanding

and extreme industrial environments. As a human implant material, silicon nitride offers bone ingrowth, resistance to bacterial and viral infection, ease of diagnostic imaging, resistance to corrosion, and superior strength and fracture resistance, all of which claims are validated in our large and growing inventory of peer-reviewed, published literature reports. We believe that our versatile silicon nitride manufacturing expertise positions us favorably to introduce new and innovative devices in the medical and non-medical fields.

In June 2022, we acquired Technology Assessment and Transfer, Inc. (TA&T), a nearly 40-year-old business with a mission to transition advanced materials and process technologies from a laboratory environment to commercial products and services. TA&T has supplied ceramics for use in several biomedical applications. These products were made via 3D printing and include components for surgical instruments as well as conceptual and prototype dental implants.

Technical Applications: It is our belief that our silicon nitride has the best combination of mechanical, thermal, and electrical properties of any technical ceramic material. It is a high-performance technical ceramic with high strength, toughness, and hardness, and is extremely resistant to thermal shock and impact. It is also an electrically insulating ceramic material. Typically, it is used in applications where high load-bearing capacity, thermal stability, and wear resistance are required. We have obtained AS9100D certification and ITAR registration to facilitate entry into the aerospace and protective armor market.

We recently entered the ceramic armor market through the purchase of assets from B4C, LLC and a technology partnership with Precision Ceramics USA. We will develop and manufacture high-performance ceramics for personnel, aircraft, and vehicle armor including a 100% Boron Carbide material for ultimate lightweight performance in ballistic applications, and a composite material made of Boron Carbide and Silicon Carbide for exceptional multi-hit performance against ballistic threats. We have signed a 10-year lease at a building near our headquarters in Salt Lake City, Utah to house development and manufacturing activities for SINTX Armor.

TA&T's primary area of expertise is material processing and fabrication know how for a broad spectrum of monolithic ceramic, ceramic composite, and coating materials. Primary technologies include Additive Manufacturing (3D Printing) of ceramics and metals, low-cost fabrication of fiber reinforced ceramic matrix composites (CMCs) and refractory chemical vapor deposited (CVD) coatings, transparent ceramics for ballistic armor and optical applications, and magnetron sputtered (PVD) coatings for lubrication, wear resistance and environmental barrier coatings for CMCs. TA&T also provides a host of services that include 3D printing, PVD-CVD coatings, material processing-CMCs, CIP, PS, HP, HIP, and material characterization for powders and finished parts-TGA/DSC, PSD. SA, Dilatometry, UV-VIS and FTIR transmission, haze and clarity.

Antipathogenic Applications: Today, there is a global need to improve protection against pathogens in everyday life. SINTX believes that by incorporating its unique composition of silicon nitride antipathogenic powder into products such as face masks, filters, and wound care devices, it is possible to manufacture surfaces that inactivate pathogens, thereby limiting the spread of infection and disease. The discovery in 2020 that SINTX silicon nitride inactivates S ARS-CoV-2, the virus which causes the disease COVID-19, has opened new markets and applications for our material and we have focused many of our resources on these opportunities.

We presently manufacture advanced ceramic powders and components in our manufacturing facilities based in Salt Lake City, Utah.

Our Strategy

Our goal is to become a leading advanced ceramics company. Key elements of our strategy to achieve this goal are the following:

- *Develop new products with anti-pathogenic properties, including inactivation of the SARS-CoV-2 virus, utilizing our silicon nitride technology.* We have conducted multiple tests over the last nine years which have identified and verified the antipathogenic properties of our silicon nitride powders, fully dense components, and silicon nitride-containing composites. Our research has explored the fundamental mechanisms responsible for these antipathogenic properties with the objective of developing commercial products and revenue from them. We have several partnerships exploring opportunities in face masks, filters, wound care, and coatings.

- *Develop additional commercial opportunities outside of the medical device market.* We have pursued the development of non-medical uses for our silicon nitride since selling the retail spine business in 2018. In 2019, we became ITAR-registered and obtained AS9100D certification of our quality management system. We have hired experienced business development employees to identify new markets and applications for our materials and develop commercial relationships. We made the first shipments of non-medical products in our history in 2020, and several of these have transitioned from prototype to regular production orders. The launch of SINTX Armor will generate revenue from new products. The acquisition of TA&T brings revenue from multiple markets that we have previously not participated in.

- *Develop new silicon nitride manufacturing technologies.* Our current manufacturing process has allowed us to successfully produce spinal implants for over 10 years. We have made advancements in our processes – including the purchase of new manufacturing equipment – which we have leveraged to develop new porous and textured implants. In 2021, SINTX purchased new equipment for its research and development team to develop new composite products of silicon nitride with rigid polymers and fabrics. We have received three NIH grants over the last fifteen months in order to develop 3D printed silicon nitride / polymer implantable medical devices.

- *Apply our silicon nitride technology platform to new medical opportunities.* We believe our biomaterial expertise, flexible manufacturing process, and strong intellectual property will allow us to transition currently available medical device products made of inferior biomaterials and manufacture them using silicon nitride and our technology platform to improve their characteristics. We are seeking partnerships to utilize our capabilities and manufacture products for medical OEM and private label partnerships. We see specific opportunities in markets such as foot and ankle, dental, maxillofacial, and arthroplasty.

Intellectual Property

We rely on a combination of patents, trademarks, trade secrets, nondisclosure agreements, proprietary information ownership agreements and other intellectual property measures to protect our intellectual property rights. We believe that to have a competitive advantage, we must continue to develop and maintain the proprietary aspects of our technologies.

We have eleven issued U.S. patents, five foreign patents, eighteen pending U.S. non-provisional patent applications, no pending U.S. provisional patent applications, eighty-five pending foreign applications and six pending PCT patent applications. Our first issued patent expired in 2016, with the last of these patents expiring in 2039.

We have three U.S. patents directed to articulating implants using our high-strength, high toughness doped silicon nitride solid ceramic. These issued patents, which include US 7,666,229; US 9,051,639; and US 9,517,136 will expire in November 2023, September 2032, and March 2034, respectively.

We also have one U.S. patent related to our CSC technology that are directed to implants that have both a dense load-bearing, or cortical, component and a porous, or cancellous, component, together with a surface coating. The issued patent US 9,649,197 will expire in July 2035.

In addition, U.S. Patent No. 10,806,831 directed to antibacterial implants and U.S. Patent No. 11,191,787 directed to antipathogenic devices were recently issued which will expire in 2037 and 2039, respectively.

With respect to PCT patent application serial no. PCT/US2018/014781 directed to antibacterial biomedical implants, we entered the national stage in Europe, Australia, Brazil, Canada, China, Japan, Hong Kong, and South Korea as well as one divisional patent application filed in Europe and two divisional applications filed in Japan to seek potential patent protection for our proprietary technologies in those countries**.**

With respect to PCT patent application serial no. PCT/US2019/026789 directed to methods for improving the wear performance of ceramic-polyethylene or ceramic-ceramic articulation couples utilized in orthopaedic joint prostheses, we entered the national stage in Australia, Brazil, Canada, Europe, Japan, Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2019/048072 directed to antipathogenic devices and methods, we entered the national stage in Europe, Japan, Mexico, Australia, Brazil, Canada, South Korea, China, and India to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2020/037170 directed to methods of surface functionalization of zirconia-toughened alumina with silicon nitride, we entered the national stage in Europe, Australia, Brazil, Canada, China, India, Japan, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/014725 directed to antifungal composites and methods thereof, we entered the national stage in Europe, Brazil, Japan, Australia, Canada, China, India, Mexico, and South Korea to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/027258 directed to antipathogenic face mask, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/027263 directed to systems and methods for rapid inactivation of SARS-CoV2 by silicon nitride, copper, and aluminum nitride, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/038364 directed to antipathogenic devices and methods thereof for antifungal applications, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/028975 directed to methods for laser coating of silicon nitride on a metal substrate, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no PCT/US2021/028641 directed to methods of silicon nitride laser cladding, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

In relation to the sale of our spine implant business to CTL Medical under the Asset Purchase Agreement dated September 5, 2018, we assigned our entire right to forty-eight (48) U.S. patents, two (2) foreign patents and three (3) pending patent applications from our patent portfolio to CTL Medical under that transaction. In addition, three (3) U.S. patents (U.S. patent nos. 9,399,309; 9,517,136; and 9,649,197) directed to silicon nitride manufacturing processes were licensed to CTL Medical under an irrevocable, fully paid-up, worldwide license for a ten-year term with CTL Medical also having a Right of First Negotiation to acquire these patents if SINTX decides to later sell these IP assets to a third party.

Our remaining issued patents and pending applications are directed to additional aspects of our products and technologies including, among other things:

- designs for intervertebral fusion devices;
- designs for hip implants;
- designs for knee implants;
- implants with improved antibacterial characteristics;
- implants with improved wear performance and surface functionalization
- antipathogenic, antibacterial, antimicrobial, antifungal, and antiviral compositions, devices, and methods; and
- methods and systems for laser cladding, laser coating, and laser sintering of silicon nitride.

We also expect to rely on trade secrets, know-how, continuing technological innovation and in-licensing opportunities to develop and maintain our intellectual property position. However, trade secrets are difficult to protect. We seek to protect the trade secrets in our proprietary technology and processes, in part, by entering into confidentiality agreements with commercial partners, collaborators, employees, consultants, scientific advisors and other contractors and into invention assignment agreements with our employees and some of our commercial partners and consultants. These agreements are designed to protect our proprietary information and, in the case of the invention assignment agreements, to grant us ownership of the technologies that are developed.

Recent Developments

Reverse Stock Split

On December 19, 2022, we filed an amendment to our Restated Certificate of Incorporation with the Delaware Secretary of State to effect a 1-for-100 reverse stock split of our common stock, which became effective at 12:01 am Eastern Time on December 20, 2022. The par value of our common stock and convertible preferred stock was not adjusted as a result of the reverse stock split. All common stock, warrant, stock option, restricted stock unit, and per share amounts in the financial statements included in this prospectus have been retroactively adjusted for all periods presented to give effect to the reverse stock split.

Amendment to Equity Distribution Agreement

On January 10, 2023, we entered into an amendment to our Equity Distribution Agreement (the "Distribution Agreement") with Maxim, pursuant to which the expiration date of the Distribution Agreement was extended to the earlier of: (i) the sale of shares having an aggregate offering price of $15,000,000, (ii) the termination by either Maxim or the Company upon the provision of fifteen (15) days written notice, or (iii) February 25, 2024. No other changes were made to the terms of the Distribution Agreement.

Preliminary Results for the Year Ended December 31, 2022

Preliminary unaudited estimated revenue was approximately $770k for the fourth quarter ended December 31, 2022 and $1.6 million for the year ended December 31, 2022. We continued quarter-on-quarter revenue growth throughout 2022 and exceeded the annual revenue of any prior year since selling the spine business in 2018.

Government contracts and grants in biomedical and technical ceramics fields made up $521k in the fourth quarter ended December 31, 2022 and $962k for the full year. Sources of commercial revenue included products for aerospace, energy, dental, and spine markets totaling $248k in the fourth quarter ended December 31, 2022 and $602k for the full year. Our recent acquisition of TA&T also made a large contribution to the overall revenue result.

We anticipate new revenue sources in 2023 via continued growth in the aerospace and energy markets. In addition, we expect the armor facility in Salt Lake City to be fully operational in the first quarter of 2023.

We have not yet completed the preparation of our financial statements for the fourth quarter and full year ended 2022. Our revenue expectations for the fourth quarter and full year ended 2022, are preliminary, unaudited and are subject to change based on the completion of ongoing internal control, review, and audit procedures. As a result, these amounts may differ materially from the amounts that will be reflected in our consolidated financial statements for the year ended December 31, 2022.

Corporate Information

Our headquarters is located at 1885 West 2100 South, Salt Lake City, Utah 84119, and our telephone number is (801) 839-3500. We maintain a website at https://www.sintx.com. Information on the website is not incorporated by reference and is not a part of this prospectus.

Summary of the Offering

Securities to be Offered	Up to 2,150,000 Units on a best-efforts basis, at a public offering price of $5.60 per Unit. Each Unit consists of one share of common stock, one Class C Warrant, and one-half of one Class D Warrant. We are also offering to each purchaser, with respect to the purchase of Units that would otherwise result in the purchaser's beneficial ownership exceeding 4.99% of our outstanding shares of common stock immediately following the consummation of this offering, the opportunity to purchase one pre-funded warrant in lieu of one share of common stock. A holder of pre-funded warrants will not have the right to exercise any portion of its pre-funded warrant if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, such limit may be increased to up to 9.99%) of the number of shares of common stock outstanding immediately after giving effect to such exercise. Each pre-funded warrant will be exercisable for one share of common stock. The purchase price per pre-funded warrant will be equal to the price per share of common stock, minus $0.0001, and the exercise price of each pre-funded warrant will equal $0.0001 per share. The pre-funded warrants will be immediately exercisable (subject to the beneficial ownership cap) and may be exercised at any time in perpetuity until all of the pre-funded warrants are exercised in full. For more information regarding the pre-funded warrants, you should carefully read the section titled "Description of Securities Included in this Offering" in this prospectus. The Units will not be certificated or issued in stand-alone form. The shares of common stock and pre-funded warrants, if any, can each be purchased in this offering only with the accompanying Warrants as part of a Unit, but the components of the Units will immediately separate upon issuance. We are also registering the shares of common stock issuable from time to time upon exercise of the Class C Warrants, Class D Warrants, and pre-funded warrants included in the Units offered hereby.
Size of Offering	$12,040,000
Subscription Price Per Unit	$5.60 (or $5.5999 per Unit including one pre-funded warrant in lieu of one share of common stock)
Description of the Class C Warrants	Each Class C Warrant will have an exercise price of $5.60 per share, will be exercisable upon issuance and will expire five years from issuance. Each Class C Warrant is exercisable for one share of common stock, subject to adjustment in the event of stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our shares of common stock as described herein. Subject to certain conditions, the Class C Warrants may also be exercised on a cashless basis for a number of shares equal to the product of (x) the number of shares that would be received if the warrant was exercised for cash and (y) 0.40. The terms of the Class C Warrants will be governed by a Warrant Agency Agreement, dated as of the closing date of this offering, that we expect to be entered into between us and American Stock Transfer & Trust Company, LLC or its affiliate (the "Warrant Agent"). This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the Class C Warrants. For more information regarding the Class C Warrants, you should carefully read the section titled "Description of Securities Included in this Offering" in this prospectus.

Description of the Class D Warrants	Each whole Class D Warrant will have an exercise price of $5.60 per share, will be exercisable upon issuance and will expire three years from issuance. Each whole Class D Warrant is exercisable for one share of common stock, subject to adjustment in the event of stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our shares of common stock as described herein. Subject to certain conditions, the Class D Warrants may also be exercised on a cashless basis for a number of shares equal to the product of (x) the number of shares that would be received if the warrant was exercised for cash and (y) 0.80. The terms of the Class D Warrants will be governed by a Warrant Agency Agreement, dated as of the closing date of this offering, that we expect to be entered into between us and the Warrant Agent. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the Class D Warrants. For more information regarding the Class D Warrants, you should carefully read the section titled "Description of Securities Included in this Offering" in this prospectus.
Placement Agent Warrants	We have agreed to issue to the placement agent warrants to purchase a number of shares of Common Stock equal to 4% of the total number of securities being sold in the Offering. The placement agent's warrants will be exercisable at any time, and from time to time, in whole or in part, during the four and one-half year period commencing 180 days from the effective date of the registration statement of which this prospectus forms a part. The placement agent's warrants will be exercisable at a price per share equal to 110.0% of the exercise price of the Warrants. We are also registering the shares of common stock issuable upon the exercise of the placement agent warrants.
Common Stock Outstanding Prior to This Offering	542,146 shares
Common Stock Outstanding after This Offering	Up to approximately 2,522,146 shares (assuming no exercise of Warrants issued in connection with this offering), or 6,003,146 shares if the Warrants are exercised in full.
Use of Proceeds	Assuming no exercise of Warrants issued in connection with this offering, we estimate the net proceeds of the Offering will be approximately $10.9 million. We intend to use the net proceeds from this offering for general corporate purposes, which may include research and development expenses, capital expenditures, working capital and general and administrative expenses, and potential acquisitions of or investments in businesses, products and technologies that complement our business, although we have no present commitments or agreements to make any such acquisitions or investments as of the date of this prospectus. We expect to use any proceeds we receive from the exercise of Warrants for substantially the same purposes and in substantially the same manner. Pending these uses, we intend to invest the funds in short-term, investment grade, interest-bearing securities. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us. See "Use of Proceeds." Our management will have broad discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the net proceeds from this offering. See "Risk Factors" for a discussion of certain risks that may affect our intended use of the net proceeds from this offering.
Market for Common Stock	Our common stock is listed on Nasdaq under the symbol "SINT."
Market for Pre-Funded Warrants and Warrants	There is no established public trading market for the pre-funded warrants or Warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the pre-funded warrants or Warrants on any securities exchange or recognized trading system.

Risk Factors	An investment in our securities is highly speculative and involves a significant degree of risk. See "Risk Factors" and other information included in this prospectus for a discussion of factors you should carefully consider before deciding to invest in our securities.
Best Efforts Offering	We have agreed to offer and sell the securities offered hereby to the purchasers through the placement agent. The placement agent is not required to buy or sell any specific number or dollar amount of the securities offered hereby, but it will use its reasonable best efforts to solicit offers to purchase the securities offered by this prospectus. See "Plan of Distribution" on page 102 of this prospectus.

The number of shares of common stock to be outstanding after this offering is based on 542,146 shares of common stock outstanding as of December 31, 2022 and excludes:

- 12,912 shares of common stock issuable upon the exercise of outstanding options and restricted stock units granted as of December 31, 2022 under our equity incentive plans at a weighted average exercise price of $239.43 per share;
- 640,131 shares of common stock issuable upon the exercise of outstanding warrants issued as of December 31, 2022;
- 3,104 shares of our common stock issuable upon the conversion of 26 shares of series B convertible preferred stock outstanding as of December 31, 2022, which may be a larger number of shares of common stock depending upon how the Series B convertible preferred stock anti-dilution provision is interpreted;
- 338 shares of our common stock issuable upon the conversion of 50 shares of series C convertible preferred stock outstanding as of December 31, 2022; and
- 13,641 shares of common stock reserved for issuance upon conversion of 206 shares of the Series D Preferred Stock outstanding as of December 31, 2022.

Unless otherwise indicated, the information in this prospectus, including the number of shares outstanding after this offering, does not reflect any issuance, exercise, vesting, expiration, or forfeiture of any additional equity awards under our incentive plans that occurred after December 31, 2022.

Except as otherwise indicated, all information in this prospectus gives effect to a 1-for-100 reverse stock split of our common stock, which became effective as of December 20, 2022.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision with respect to our securities, we urge you to carefully consider the risks described in the "Risk Factors" section herein. These risk factors relate to our business, intellectual property, regulatory matters, and ownership of our common stock. In

addition, the following risk factors present material risks and uncertainties associated with the Offering. The risks and uncertainties incorporated by reference into this prospectus or described below are not the only ones we face. Additional risks and uncertainties not presently known or which we consider immaterial as of the date hereof may also have an adverse effect on our business. If any of the matters discussed in the following risk factors were to occur, our business, financial condition, results of operations, cash flows or prospects could be materially adversely affected, the market price of our common stock could decline and you could lose all or part of your investment in our securities.

SUMMARY OF PRINCIPAL RISK FACTORS

Our business operations are subject to numerous risks, factors and uncertainties, including those outside of our control, that could cause our actual results to be harmed, including risks regarding the following:

Risks Related to Our Capital Resources and Impairments

- We will require additional financing and our failure to obtain additional funding would force us to delay, reduce or eliminate our product development programs or commercialization efforts.
- Raising additional capital by issuing securities or through debt financings or licensing arrangements may dilute existing stockholders, restrict our operations or require us to relinquish proprietary rights.
- There is substantial doubt as to our ability to continue as a going concern.

Risks Related to Our Business and Strategy

- We have incurred net losses since our inception and may never achieve or sustain profitability.
- Our success depends on our ability to successfully commercialize advanced ceramic products for biomedical, industrial, and antipathogenic applications, which to date have experienced only limited market acceptance and which we may not be able to successfully commercialize.
- We may not be able to compete effectively against the larger, well-established companies that dominate these markets or emerging and small innovative companies seeking to increase their share of the market.
- We depend on CTL Medical's ability to sell the spinal fusion products we manufacture. If CTL Medical is not able to sell such products, our business and operating results will be adversely affected.
- If we are unable to manufacture our advanced ceramic products on a timely basis consistent with our quality standards, our results of operation will be adversely impacted.
- We depend on a limited number of third-party suppliers for key raw materials, and the loss of these third-party suppliers or their inability to supply us with adequate raw materials could harm our business.
- Part of our strategy is to establish and develop OEM partnerships and arrangements, which subjects us to various risks.
- If hospitals and other healthcare providers are unable to obtain coverage or adequate reimbursement for procedures performed with our products, it is unlikely our products will be widely used.
- Prolonged negative economic conditions in domestic and international markets may adversely affect us and could harm our financial position.
- We are dependent on our senior management team, engineering team, and external advisors, and the loss of any of them could harm our business.
- Cyber security risks and the failure to maintain the integrity of company, employee or guest data could expose us to business disruptions, data loss, litigation and liability, and our reputation and operating results could be significantly harmed.

Risks Related to Regulatory Approval of Our Products and Other Government Regulations

- Contracting with government entities exposes us to additional risks and regulatory requirements.
- We cannot be certain that we will be able to obtain regulatory clearance or approval and thereafter commercialize our biomedical or antipathogenic product candidates in a timely manner or at all.

- The safety of our biomedical products is not yet supported by long-term clinical data, and they may prove to be less safe and effective than our laboratory data indicate.
- We have little experience conducting clinical trials, they may proceed more slowly than anticipated, and we cannot be certain that our product candidates will be shown to be safe and effective for human use.
- Our current and future relationships with third-party payers and current and potential customers in the United States and elsewhere may be subject, directly or indirectly, to various laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens and diminished profits and future earnings.
- U.S. federal income tax reform could adversely affect us.
- Legislation may increase the difficulty and cost for us to obtain and monitor regulatory approval or clearance of our product candidates and affect the prices we may obtain for our products.

Risks Related to Our Intellectual Property and Litigation

- If our patents, trade secrets and contractual provisions are inadequate to protect our intellectual property, we may not be able to successfully commercialize our products or operate our business profitably.
- We have no patent protection covering the composition of matter for our solid silicon nitride or components of the related manufacturing process, and competitors may create formulations or processes substantially similar to ours.
- We could become subject to intellectual property litigation that could consume significant amounts of our resources and adversely affect our business and results of operations.
- We may be subject to damages resulting from claims that we have wrongfully used or disclosed alleged trade secrets of our competitors or are in breach of non-competition agreements with our competitors or non-solicitation agreements.
- If our advanced ceramic products or our product candidates' conflict with the rights of others, we may not be able to manufacture or market our products or product candidates.

Risks Related to This Offering and Ownership of Our Securities

- The best efforts structure of this offering may have an adverse effect on our business plan.
- You may experience substantial dilution as a result of future issuances of securities by us or through the conversion of outstanding convertible preferred stock and exercise of warrants.
- Our management will have broad discretion over the use of the net proceeds from this offering, you may not agree with how we use the proceeds and the proceeds may not be invested successfully.
- We could be delisted from Nasdaq, which could seriously harm the liquidity of our stock and our ability to raise capital.
- The price of our common stock is volatile and is likely to continue to fluctuate.
- Securities analysts may not continue to provide coverage of our common stock or may issue negative reports, which may have a negative impact on the market price of our common stock.

- Anti-takeover provisions in our organizational documents and Delaware law may discourage or prevent a change in control, which could affect our stock price adversely and prevent attempts by our stockholders to replace or remove our current management.

Risks Related to Potential Litigation from Operating Our Business

- We may become subject to potential product liability claims or claims relating to our improper handling, storage or disposal of biological or hazardous materials, which could be time consuming and costly.

Risks Related to Public Companies

- We are a "smaller reporting company" and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

Risks Related to Our Capital Resources and Impairments

We will require additional financing and our failure to obtain additional funding would force us to delay, reduce or eliminate our product development programs or commercialization efforts.

We currently have limited committed sources of capital and we have limited liquidity. Our cash and cash equivalents as of September 30, 2022 was $4.8 million. We expect our current cash and cash equivalents will be sufficient to fund our operations through the first half of 2023. Therefore, we will require substantial future capital in order to continue to continue operating our business, conduct the research and development and regulatory clearance and approval activities necessary to bring our products to market, and to establish effective marketing and sales capabilities. Our existing capital resources are not sufficient to enable us to fund the completion of the development and commercialization of all of our product candidates. We expect the gross proceeds from this offering of $12 million will be sufficient, after placement agent fees and offering expenses, to fund our operations for approximately 20 months. In any event, we will need to raise additional capital in the future to continue funding our operations and development of our business.

We cannot determine with certainty the duration and completion costs of the current or future development and commercialization of our product candidates for spinal fusion, joint replacement and coated metals or if, when, or to what extent we will generate revenues from the commercialization and sale of any of these product candidates for which we obtain regulatory approval. We may never succeed in achieving regulatory approval for certain or all of these product candidates. The duration, costs and timing of clinical trials and development of our spinal fusion, joint replacement and coated metal product candidates will depend on a variety of factors, including:

- the scope, rate of progress, and expense of our ongoing, as well as any additional, clinical trials and other research and development activities;
- future clinical trial results we may choose to conduct;
- potential changes in government regulation; and
- the timing and receipt of any regulatory approvals.

A change in the outcome of any of these variables with respect to the development of spinal fusion, joint replacement or coated metal product candidates could mean a significant change in the costs and timing associated with the development of these product candidates.

In addition, if adequate funds to develop our product candidates are not available on a timely basis, we may terminate or delay the development of one or more of our product candidates, or delay activities necessary to commercialize our product candidates. Additional funding may not be available to us on acceptable terms, or at all. Any additional equity financing, if available, may not be available on favorable terms and will most likely be dilutive to our current stockholders, and debt financing, if available, may involve more restrictive covenants. Our ability to access capital when needed is not assured and, if not achieved on a timely basis, will materially harm our business, financial condition and results of operations or could cause us to cease operations.

The timing and amount of our future capital requirements will depend on many factors, including:

- the level of sales of our current products and the cost of revenue and sales and marketing;
- the extent of any clinical trials that we will be required to conduct in support of the regulatory clearance of our total hip and knee replacement product candidates;
- the scope, progress, results and cost of our product development efforts;
- the costs, timing and outcomes of regulatory reviews of our product candidates;
- the number and types of products we develop and commercialize;

- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims; and
- the extent and scope of our general and administrative expenses.

Raising additional capital by issuing securities or through debt financings or licensing arrangements will likely cause dilution to existing stockholders, restrict our operations or require us to relinquish proprietary rights.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will likely be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through collaboration and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or products or grant licenses on terms that are not favorable to us. Any of these events could adversely affect our ability to achieve our product development and commercialization goals and have a material adverse effect on our business, financial condition and results of operations.

In previous years we have indicated that there was substantial doubt as to our ability to continue as a going concern. Depending on the results of this offering and our future operations, we may again have substantial doubt as to our ability to continue as a going concern.

Our report from our independent registered public accounting firm for the year ended December 31, 2018 included an explanatory paragraph stating that our recurring losses from operations raised substantial doubt about our ability to continue as a going concern. Our future reports may disclose substantial doubt about our ability to continue as a going concern. We have incurred substantial net losses since our inception and expect we will continue to incur substantial losses for the foreseeable future as we continue to manufacture products for CTL Medical and other OEM customers and research and develop and seek regulatory approvals for our product candidates. Therefore, our ability to continue as a going concern will depend on our ability to obtain sufficient financing to fund our operations.

If we seek additional financing to fund our business activities, investors or other financing sources may be unwilling to provide additional funding on commercially reasonable terms or at all. If we are unable to obtain sufficient funding, our business, prospects, financial condition and results of operations will be materially and adversely affected, and we may be unable to continue as a going concern. If we are unable to continue as a going concern, we may have to liquidate our assets and may receive less than the value at which those assets are carried on our consolidated financial statements, and it is likely that investors will lose all or a part of their investment.

Risks Related to Our Business and Strategy

We have incurred net losses since our inception and anticipate that we will continue to incur substantial net losses for the foreseeable future. We may never achieve or sustain profitability.

We have incurred substantial net losses since our inception. We incurred losses from continuing operations of $8.1 million for the nine months ended September 30, 2022. For the years ended December 31, 2021 and 2020 we incurred a net loss of $8.8 million and $7.0 million, respectively, and used cash in operations of $10.1 million and $9.1 million, respectively. We have an accumulated deficit of $249.9 million as of December 31, 2021. Our losses have resulted principally from costs incurred in connection with our sales and marketing activities, research and development activities, manufacturing activities, general and administrative expenses associated with our operations, impairments on intangible assets and property and equipment, interest expense, loss on extinguishment of debt and offering costs. Even if we are successful in launching new products into the market, we expect to continue to incur substantial losses for the foreseeable future as we continue to manufacture products for CTL Medical and other OEM customers and research and develop and seek regulatory approvals for our product candidates.

If sales revenue from any of our products or product candidates that receive marketing clearance from the FDA or other regulatory body is insufficient, if we are unable to develop and commercialize any of our product candidates, or if our product development is delayed, we may never become profitable. Even if we do become profitable, we may be unable to sustain or increase our profitability on a quarterly or annual basis.

Our success depends on our ability to successfully commercialize advanced ceramic products for biomedical, industrial, and antipathogenic applications, which to date have experienced only limited market acceptance.

We believe we are the first and only company to use silicon nitride in medical applications. To date, however, we have had limited acceptance of our silicon nitride-based products and prior to the disposition of our spine implant business to CTL, our product revenue was derived substantially from our non-silicon nitride products. In order to succeed in our goal of becoming a leading advanced ceramics company, we must increase market awareness of our silicon nitride interbody spinal fusion products in conjunction with CTL, and develop and launch new biomedical, industrial, and antipathogenic products. If we fail in any of these endeavors or experience delays in pursuing them, we will not generate revenues as planned and will need to curtail operations or seek additional financing earlier than otherwise anticipated.

Our current biomedical products and our future products may not be accepted by hospitals and surgeons and may not become commercially successful.

With the sale of our spine implant business to CTL we are now largely dependent on the efforts of CTL to sell the spinal fusion products that we manufacture and then sell to CTL. If CTL is not able to sell such products or is unable to increase demand for such products, then our revenues will substantially decline. Since obtaining regulatory clearance from the FDA for our first silicon nitride spinal fusion products in 2008, we have not been able to obtain significant market share of the interbody spinal fusion market, and CTL may not obtain such market share in the future. Even if we receive regulatory clearances or approvals for our other product candidates in development, these product candidates may not gain market acceptance among customers.

The orthopedic market is highly competitive, and we may not be able to compete effectively against the larger, well-established companies that dominate this market or emerging and small innovative companies that may seek to obtain or increase their share of the market.

The markets for orthopedic products are intensely competitive, and many of our competitors are much larger and have substantially more financial and human resources than we do. Many have long histories and strong reputations within the industry, and a relatively small number of companies dominate these markets. Medtronic, Inc.; DePuy Synthes Companies, a group of Johnson & Johnson companies; Stryker Corporation; Zimmer-Biomet, Inc.; Zimmer Holdings, Inc.; and Smith & Nephew plc, account for a significant number of orthopedic sales worldwide.

These companies enjoy significant competitive advantages over us, including:

- broad product offerings, which address the needs of orthopedic surgeons and hospitals in a wide range of procedures;
- products that are supported by long-term clinical data;
- greater experience in, and resources for, launching, marketing, distributing and selling products, including strong sales forces and established distribution networks;
- existing relationships with orthopedic surgeons;
- extensive intellectual property portfolios and greater resources for patent protection;
- greater financial and other resources for product research and development;
- greater experience in obtaining and maintaining FDA and other regulatory clearances and approvals for products and product enhancements;
- established manufacturing operations and contract manufacturing relationships;

- significantly greater name recognition and widely recognized trademarks; and
- established relationships with healthcare providers and payers.

Our products and any product candidates that we may introduce into the market may not enable us to overcome the competitive advantages of these large and dominant orthopedic companies. In addition, even if we successfully introduce additional product candidates incorporating our silicon nitride biomaterial into the market, emerging and

small innovative companies may seek to increase their market share and they may eventually possess competitive advantages, which could adversely impact our business. Our competitors may also employ pricing strategies that could adversely affect the pricing of our products and pricing in the spinal fusion and total joint replacement market generally.

Moreover, many other companies are seeking to develop new biomaterials and products which may compete effectively against our products in terms of performance and price. For example, Smith & Nephew has developed a ceramic-coated metal, known as Oxinium, which may overcome certain of the limitations of metal joint replacement products and could directly compete with our silicon nitride and silicon nitride-coated product candidates.

We are dependent on CTL's ability to sell the spinal fusion products we manufacture from silicon nitride. If CTL is not able to sell such products or increase demand for the products our revenues will be substantially impacted which would have a significant impact on our business and operating results.

Sales of spinal fusion products manufactured from silicon nitride to CTL account for a significant percentage of our revenues from the sale of products. We have entered into a 10-year manufacturing and supply agreement with CTL to supply CTL with its requirements of silicon nitride manufactured spinal fusion products. CTL is not under any obligation to purchase any minimum quantities of products from us. If CTL is not successful in creating demand for such products and selling such products, then they are not required to purchase any products from us. Because of our significant customer concentration, our revenue could fluctuate significantly due to changes in economic conditions, the use of competitive products, or the loss of, reduction of business with, CTL. A reduction or delay in orders from CTL, or a delay or default in payment by any significant customer, could materially harm our business and results of operations.

The manufacturing process for our silicon nitride products is complex and requires sophisticated state-of-the-art equipment, experienced manufacturing personnel and highly specialized knowledge. If we are unable to manufacture our silicon nitride products on a timely basis consistent with our quality standards, our results of operation will be adversely impacted.

In order to control the quality, cost and availability of our silicon nitride products, we developed our own manufacturing capabilities. We operate a 30,000 square foot facility which is certified under the ISO 13485 medical device manufacturing standard for medical devices and operates under the FDA's quality systems regulations, or QSRs. All operations with the exception of raw material production are performed at this facility.

We are the sole manufacturer of our silicon-nitride based products. Our reliance solely on our internal resources to manufacture our silicon nitride products entails risks to which we would not be subject if we had secondary suppliers for their manufacture, including:

- the inability to meet our product specifications and quality requirements consistently;
- a delay or inability to procure or expand sufficient manufacturing capacity to meet additional demand for our products;
- manufacturing and product quality issues related to the scale-up of manufacturing;
- the inability to produce a sufficient supply of our products to meet product demands;
- the disruption of our manufacturing facility due to equipment failure, natural disaster or failure to retain key personnel; and

- our inability to ensure our compliance with regulations and standards of the FDA, including QSRs, and corresponding state and international regulatory authorities, including the CFDA.

Any of these events could lead to a reduction in our product sales, product launch delays, failure to obtain regulatory clearance or approval or impact our ability to successfully sell our products and commercialize our products candidates.

We depend on a limited number of third-party suppliers for key raw materials used in the manufacturing of our silicon nitride products, and the loss of these third-party suppliers or their inability to supply us with adequate raw materials could harm our business.

We rely on a limited number of third-party suppliers for the raw materials required for the production of our silicon nitride products and product candidates. Our dependence on a limited number of third-party suppliers involves several risks, including limited control over pricing, availability, quality, and delivery schedules for raw materials. We have no supply agreements in place with any of our suppliers and cannot be certain that our current suppliers will continue to provide us with the quantities of raw materials that we require or that satisfy our anticipated specifications and quality requirements. Any supply interruption in limited or single sourced raw materials could materially harm our ability to manufacture our products until a new source of supply, if any, could be identified and qualified. We may be unable to find a sufficient alternative supply channel within a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the production of our silicon nitride products and product candidates and delay the development and commercialization of our product candidates, including limiting supplies necessary for commercial sale, clinical trials and regulatory approvals, which could have a material adverse effect on our business.

In order to be successful, we must expand our available product lines by commercializing new product candidates, but we may not be able to do so in a timely fashion and at expected costs, or at all.

Although we are currently manufacturing silicon nitride interbody spinal fusion implants for CTL, in order to be successful, we will need to expand our product lines to include other advanced ceramic products for both medical and non-medical applications. Therefore, we are developing new manufacturing technologies and new product candidates including our new ceramic armor products. To succeed in our commercialization efforts, we must effectively continue product development and testing, find new strategic partners, obtain regulatory clearances and approvals, and enhance our sales and marketing capabilities. Because of these uncertainties, there is no assurance that we will succeed in bringing any of our current or future product candidates to market. If we fail in bringing our product candidates to market, or experience delays in doing so, we will not generate revenues as planned and will need to curtail operations or seek additional financing earlier than otherwise anticipated.

We will depend on one or more strategic partners to develop and commercialize our biomedical and antipathogenic product candidates, and if our strategic partners are unable to execute effectively on our agreements with them, we may never become profitable.

We are seeking strategic partners to develop and commercialize our biomedical and antipathogenic product candidates. We will be reliant on our strategic partners to develop and commercialize these product candidates, although we have not yet entered into an agreement with any strategic partner to develop products and may be unable to do so on agreeable terms. In order to succeed in our joint commercialization efforts, we and any future partners must execute effectively on all elements of a combined business plan, including continuing to establish sales and marketing capabilities, manage certified, validated and effective commercial-scale manufacturing operations, conduct product development and testing, and obtain regulatory clearances and approvals for our product candidates. If we or any of our strategic partners fail in any of these endeavors, or experience delays in pursuing them, we will not generate revenues as planned and will need to curtail operations or seek additional financing earlier than otherwise anticipated.

Part of our strategy is to establish and develop OEM partnerships and arrangements, which subjects us to various risks.

Because we believe silicon nitride is a superior platform and technology for application in the spine, total joint and other markets and industrial applications, we are establishing OEM partnerships with other companies to replace their materials and products with silicon nitride. Sales of products to OEM customers will expose our business to a number of risks. Sales through OEM partners could be less profitable than direct sales. Sales of our products through multiple channels could also confuse customers and cause the sale of our products to decline. In addition, OEM customers will require that products meet strict standards. Our compliance with these requirements could result in increased development, manufacturing, warranty and administrative costs. A significant increase in these costs could adversely affect our operating results. If we fail to meet OEM specifications on a timely basis, our relationships with our OEM partners may be harmed. Furthermore, we would not control our OEM partners, and they could sell competing products, may not incorporate our technology into their products in a timely manner and may devote insufficient sales efforts to the OEM products.

If hospitals and other healthcare providers are unable to obtain coverage or adequate reimbursement for procedures performed with our products, it is unlikely our products will be widely used.

In the United States, the commercial success of our products will depend, in part, on the extent to which governmental payers at the federal and state levels, including Medicare and Medicaid, private health insurers and other third-party payers provide coverage for and establish adequate reimbursement levels for procedures utilizing our products. Because we typically receive payment directly from the companies for whom we manufacture, such as CTL Medical, we do not anticipate relying directly on payment from third-party payers for our products. However, hospitals and other healthcare providers that purchase orthopedic products manufactured by us from our customers for treatment of their patients generally rely on third-party payers to pay for all or part of the costs and fees associated with our products as part of a "bundled" rate for the associated procedures. The existence of coverage and adequate reimbursement for our products and the procedures performed with them by government and private payers is critical to market acceptance of our existing and future products. Neither hospitals nor surgeons are likely to use our products if they do not receive adequate reimbursement for the procedures utilizing our products.

Many private payers currently base their reimbursement policies on the coverage decisions and payment amounts determined by the Centers for Medicare and Medicaid Services, or CMS, which administers the Medicare program. Others may adopt different coverage or reimbursement policies for procedures performed with our products, while some governmental programs, such as Medicaid, have reimbursement policies that vary from state to state, some of which may not pay for the procedures performed with our products in an adequate amount, if at all. A Medicare national or local coverage decision denying coverage for one or more of our products could result in private and other third-party payers also denying coverage for our products. Third-party payers also may deny reimbursement for our products if they determine that a product used in a procedure was not medically necessary, was not used in accordance with cost-effective treatment methods, as determined by the third-party payer, or was used for an unapproved use. Unfavorable coverage or reimbursement decisions by government programs or private payers underscore the uncertainty that our products face in the market and could have a material adverse effect on our business.

Many hospitals and clinics in the United States belong to group purchasing organizations, which typically incentivize their hospital members to make a relatively large proportion of purchases from a limited number of vendors of similar products that have contracted to offer discounted prices. Such contracts often include exceptions for purchasing certain innovative new technologies, however. Accordingly, the commercial success of our products may also depend to some extent on our ability to either negotiate favorable purchase contracts with key group purchasing organizations and/or persuade hospitals and clinics to purchase our product "off contract."

The healthcare industry in the United States has experienced a trend toward cost containment as government and private payers seek to control healthcare costs by paying service providers lower rates. While it is expected that hospitals will be able to obtain coverage for procedures using our products, the level of payment available to them for such procedures may change over time. State and federal healthcare programs, such as Medicare and Medicaid, closely regulate provider payment levels and have sought to contain, and sometimes reduce, payment levels. Private payers frequently follow government payment policies and are likewise interested in controlling increases in the cost of medical care. In addition, some payers are adopting pay-for-performance programs that differentiate payments to healthcare providers based on the achievement of documented quality-of-care metrics, cost efficiencies, or patient outcomes. These programs are intended to provide incentives to providers to deliver the same or better results while consuming fewer resources. As a result of these programs, and related payer efforts to reduce payment levels, hospitals and other providers are seeking ways to reduce their costs, including the amounts they pay to medical device manufacturers. We may not be able to sell our implants profitably if third-party payers deny or discontinue coverage or reduce their levels of payment below that which we project, or if our production costs increase at a greater rate than payment levels. Adverse changes in payment rates by payers to hospitals could adversely impact our ability to market and sell our products and negatively affect our financial performance.

In international markets, medical device regulatory requirements and healthcare payment systems vary significantly from country to country, and many countries have instituted price ceilings on specific product lines. We cannot assure you that our products will be considered cost-effective by international third-party payers, that reimbursement will be available or, if available, that the third-party payers' reimbursement policies will not adversely affect our ability to sell our products profitably. Any failure to receive regulatory or reimbursement approvals would negatively impact market acceptance of our products in any international markets in which those approvals are sought.

There is no assurance that federal or state healthcare reform will not also adversely affect our business and financial results, and we cannot predict how future federal or state legislative, judicial or administrative changes relating to healthcare reform will affect our business.

A pandemic, epidemic or outbreak of an infectious disease in the United States or elsewhere may adversely affect our business.

We continue to monitor the rapidly evolving situation and guidance from domestic and international authorities, including federal, state and local public health authorities, regarding the COVID-19 pandemic, and we may need to make changes to our business based on their recommendations. In these circumstances, there may be developments outside our control requiring us to adjust our operating plan. Although the Company cannot reasonably estimate the length or severity of the impact that the pandemic will have on its financial results, the Company has experienced, and may continue to experience, a material adverse impact on its sales, results of operations, and cash flows in fiscal 2022.

A significant outbreak in the future of contagious diseases, such as COVID-19, could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in an economic downturn. As a result, our ability to raise additional funds, if necessary, may be adversely impacted by risks, or the public perception of the risks, related to the recent outbreak of COVID-19. Furthermore, the third parties we engage, or seek to engage, with respect to OEM manufacturing relationships, and, for supply and development activities, may be adversely impacted by risks, or the public perception of the risks, related to the recent outbreak of COVID-19, which may delay OEM relationships, and, product development opportunities, and increase our costs.

Prolonged negative economic conditions in domestic and international markets may adversely affect us, our suppliers, partners and consumers, and could harm our financial position.

There is a risk that one or more of our current suppliers may not continue to operate. Any lender that is obligated to provide funding to us under any future credit agreement with us may not be able to provide funding in a timely manner, or at all, when we require it. The cost of, or lack of, available credit or equity financing could impact our ability to develop sufficient liquidity to maintain or grow our company. These negative changes in domestic and international economic conditions or additional disruptions of either or both of the financial and credit markets may also affect third-party payers and may have a material adverse effect on our business, results of operations, financial condition and liquidity.

In addition, we believe that various demographics and industry-specific trends will help drive growth in our target markets, but these demographics and trends are uncertain. Actual demand for our products could be significantly less than expected if our assumptions regarding these factors prove to be incorrect or do not materialize.

We are dependent on our senior management team, engineering team, and external advisors, and the loss of any of them could harm our business. We may not have sufficient personnel to effectuate our business strategy due to our recent reduction in force.

The members of our current senior management team may not be able to successfully implement our strategy. In addition, we have not entered into employment agreements, other than change-in-control severance agreements, with any of the members of our senior management team. There are no assurances that the services of any of these individuals will be available to us for any specified period of time. The successful integration of our senior management team, the loss of members of our senior management team, engineering team and key external advisors, or our inability to attract or retain other qualified personnel or advisors could have a material adverse effect on our business, financial condition and results of operations. We may not have sufficient number of qualified personnel to effectuate our business strategy which could have a material adverse effect on our business, financial condition and results of operations.

If we experience significant disruptions in our information technology systems, our business, results of operations and financial condition could be adversely affected.

The efficient operation of our business depends on our information technology systems. We rely on our information technology systems to effectively manage our sales and marketing, accounting and financial functions; manufacturing processes; inventory; engineering and product development functions; and our research and development functions. As such, our information technology systems are vulnerable to damage or interruption including from earthquakes, fires, floods and other natural disasters; terrorist attacks and attacks by computer viruses or hackers; power losses; and computer systems, or Internet, telecommunications or data network failures. The failure of our information technology systems to perform as we anticipate or our failure to effectively implement new systems could disrupt our entire operation and could result in decreased sales, increased overhead costs, excess inventory and product shortages, all of which could have a material adverse effect on our reputation, business, results of operations and financial condition.

Cyber security risks and the failure to maintain the integrity of company, employee or guest data could expose us to data loss, litigation and liability, and our reputation could be significantly harmed.

We collect and third parties collaborating on our clinical trials collect and retain large volumes of data, including personally identifiable information regarding clinical trial participants and others, for business purposes, including for regulatory, research and development and commercialization purposes, and our collaborators' various information technology systems enter, process, summarize and report such data. We also maintain personally identifiable information about our employees. The integrity and protection of our company, employee and clinical data is critical to our business. We are subject to significant security and privacy regulations, as well as requirements imposed by government regulation. Maintaining compliance with these evolving regulations and requirements could be difficult and may increase our expenses. In addition, a penetrated or compromised data system or the intentional, inadvertent or negligent release or disclosure of data could result in theft, loss or fraudulent or unlawful use of company, employee or clinical data which could harm our reputation, disrupt our operations, or result in remedial and other costs, fines or lawsuits.

Risks Related to Regulatory Approval of Our Products and Other Government Regulations

Contracting with government entities exposes us to additional risks inherent in the government procurement process.

We provide products and services, directly and indirectly, to a variety of domestic government entities, which introduces certain risks, including extended sales and collection cycles, varying governmental budgeting processes and adherence to complex procurement regulations and other government-specific contractual requirements. We have been, are currently and may in the future be subject to audits and investigations relating to our government contracts and any violations could result in various civil and criminal penalties and administrative sanctions, including termination of contracts, payment of fines and suspension or debarment from future government business, as well as harm to our reputation and financial results.

Changes in U.S. government defense spending could negatively impact our financial position, results of operations, liquidity and overall business.

U.S. government sales constitute a portion of our consolidated sales. Our U.S. government revenues largely result from contracts awarded under various U.S. government programs, primarily defense-related programs with the U.S. Department of Defense (DoD). Changes in U.S. government defense spending for various reasons, including as a result of potential changes in policy positions or priorities, could negatively impact our results of operations, financial condition and liquidity. Our programs are subject to U.S. government policies, budget decisions and appropriation processes which are driven by numerous factors including: (1) geopolitical events; (2) macroeconomic conditions; and (3) the ability of the U.S. government to enact relevant legislation, such as appropriations bills. In recent years, U.S. government appropriations have been affected by larger U.S. government budgetary issues and related legislation, and the U.S. government has been unable to complete its budget process before the end of its fiscal year, resulting in both governmental shutdowns and congress providing only enough funds for U.S. government agencies to continue operating at prior-year levels. Further, if the U.S. government debt ceiling is not raised and the national debt reaches the statutory debt ceiling, the U.S. government could default on its debts. As a result, U.S. government defense spending levels are subject to a wide range of outcomes and are difficult to predict beyond the near-term due to numerous factors, including the external threat environment, future governmental priorities and the state of governmental finances. Significant changes in U.S. government defense spending or changes in U.S. government priorities, policies and requirements could have a material adverse effect on our results of operations, financial condition and liquidity.

We design, manufacture and service products that incorporate advanced technologies; the introduction of new products and technologies involves risks and we may not realize the degree or timing of benefits initially anticipated; competition may reduce our revenues and segment share and limit our future opportunities.

We seek to achieve growth through the design, development, production, sale and support of innovative commercial products that incorporate advanced technologies. The product, program and service needs of our customers change and evolve regularly, and we invest substantial amounts in research and development efforts to pursue advancements in a wide range of technologies, products and services. Our ability to realize the anticipated benefits of our technological advancements depends on a variety of factors, including meeting development, production, certification and regulatory approval schedules; receiving regulatory approvals; execution of internal and external performance plans; availability of supplier and internally produced parts and materials; performance of suppliers and subcontractors; availability of supplier and internal facility capacity to perform maintenance, repair and overhaul services on our products; hiring and training of qualified personnel; achieving cost and production efficiencies; identification of emerging technological trends for our target end-customers (such as sustainable technologies, as described below); validation of innovative technologies; risks associated with the development of complex software; the level of customer interest in new technologies and products; and customer acceptance of products we manufacture or that incorporate technologies we develop. In addition, many of our products must adhere to strict regulatory and market-driven safety and performance standards in a variety of jurisdictions. The evolving nature of these standards, along with the long duration of development, production and aftermarket support programs, creates uncertainty regarding program profitability, particularly with our aircraft engine products. Development efforts divert resources from other potential investments in our businesses, and these efforts may not lead to the development of new technologies or products on a timely basis or meet the needs of our customers as fully as competitive offerings. In addition, the industries for our products or products that incorporate our technologies may not develop or grow as we anticipate. We or our customers, suppliers or subcontractors may encounter difficulties in developing and producing new products and services, and may not realize the degree or timing of benefits initially anticipated or may otherwise suffer significant adverse financial consequences. Due to the design complexity of our products or those of our customers or third party manufacturers that incorporate our products into theirs or our customers' products, we may experience delays in completing the development and introduction of new products or we may experience the suspension of production after these products enter into service due to safety concerns. Delays and/or suspension of production could result in increased development costs or deflect resources from other projects. We operate in highly competitive industries and our competitors may have more extensive or more specialized engineering, manufacturing, marketing and servicing capabilities than we do. Our contracts are typically awarded on a competitive basis. Our bids are based upon, among other items, the cost to provide the products and

services. To generate an acceptable return on our investment in these contracts, we must be able to accurately estimate our costs to provide the services and deliver the products and to be able to complete the contracts in a timely manner. If we fail to accurately estimate our costs or the time required to complete a contract, the profitability of our contracts may be materially and adversely affected. Furthermore, our competitors, including our customers, may develop competing technologies which gain industry acceptance in advance of or instead of our products, or meet particular in-demand technological needs before us or with technology that is superior to our existing or new technologies. For example, the enhanced focus on climate change has increased demand for more environmentally sustainable products and services, as described below. Our competitors may develop sustainable products or services that are available to our customers before our products or services, or that are adopted more readily than our products or services. In addition, our competitors or customers might develop new technologies or offerings that might cause our existing technologies and offerings to become obsolete or otherwise decrease demand for our offerings. In addition, the possibility exists that competitors or customers will develop aftermarket services and aftermarket parts for our products that attract customers and adversely impact our return on investment on new products. If we are unable to continue to compete successfully against our current or future competitors in our core businesses, we may experience declines in revenues and industry segment share. Any of the foregoing could have a material adverse effect on our competitive position, results of operations, financial condition or liquidity.

Exports and imports of certain of our products are subject to various export control, sanctions and import regulations and may require authorization from regulatory agencies of the U.S. or other countries.

We must comply with various laws and regulations relating to the export and import of products, services and technology from and into the U.S. and other countries having jurisdiction over our operations. In the U.S., these laws and regulations include, among others, the EAR administered by the U.S. Department of Commerce, the ITAR administered by the U.S. Department of State, embargoes and sanctions regulations administered by the U.S. Department of the Treasury, and import regulations administered by the U.S. Department of Homeland Security and the U.S. Department of Justice. Certain of our products, services and technologies have military or strategic applications and we are required to obtain licenses and authorizations from the appropriate U.S. government agencies before selling these products outside of the U.S. or importing these products into the U.S. U.S. foreign policy or foreign policy of other licensing jurisdictions may affect the licensing process or otherwise prevent us from engaging in business dealings with certain individuals, entities or countries. Any failure by us, our customers or our suppliers to comply with these laws and regulations could result in civil or criminal penalties, fines, seizure of our products, adverse publicity, restrictions on our ability to export or import our products, or the suspension or debarment from doing business with the U.S. government. Moreover, any changes in export control, sanctions or import regulations may further restrict the export of our products or services, and the possibility of such changes requires constant monitoring to ensure we remain compliant. Our ability to obtain required licenses and authorizations on a timely basis or at all is subject to risks and uncertainties, including changing U.S. government foreign policies or laws, delays in Congressional action, or geopolitical and other factors. If we are not successful in obtaining or maintaining the necessary licenses or authorizations in a timely manner, our sales relating to those approvals may be prevented or delayed, and revenue and profit previously recognized may be reversed. Any restrictions on the export or import of our products or product lines could have a material adverse effect on our competitive position, results of operations, financial condition or liquidity.

As a U.S. government contractor, we are subject to risks relating to U.S. government audits, investigations, and disputes.

We are subject to U.S. government investigations relating to our U.S. government contracts. Such U.S. government investigations often take years to complete and could result in administrative, civil or criminal liabilities, including repayments, fines, treble and other damages, forfeitures, restitution or penalties, or could lead to suspension or debarment of U.S. government contracting or of export privileges. For instance, if we or one of our business units were charged with wrongdoing in connection with a U.S. government investigation (including fraud, or violation of certain environmental or export laws, as further described below), the U.S. government could suspend us from bidding on or receiving awards of new U.S. government contracts pending the completion of legal proceedings. If convicted or found liable, the U.S. government could fine and debar us from new U.S. government contracting for a period generally not to exceed three years and could void any contracts found to be tainted by fraud. We also could suffer reputational harm if allegations of impropriety were made against us, even if such allegations are later determined to be unsubstantiated. Further, our U.S. government contracts are subject to audit. An adverse outcome of any audit or investigation could result in civil and criminal penalties and fines, which could negatively impact our results of operations, financial condition and liquidity. In addition, if allegations of impropriety were made against us, we could suffer serious reputational harm, which could negatively affect our financial position, results of operations and liquidity.

Our long-term success depends substantially on our ability to obtain regulatory clearance or approval and thereafter commercialize our product candidates; we cannot be certain that we will be able to do so in a timely manner or at all.

The process of obtaining regulatory clearances or approvals to market a medical device from the FDA or similar regulatory authorities outside of the United States can be costly and time consuming, and there can be no assurance that such clearances or approvals will be granted on a timely basis, or at all. The FDA's 510(k) clearance process generally takes one to six months from the date of submission, depending on whether a special or traditional 510(k) premarket notification has been submitted, but can take significantly longer. An application for premarket approval, or PMA, must be submitted to the FDA if the device cannot be cleared through the 510(k) clearance process or is not exempt from premarket review by the FDA. The PMA process almost always requires one or more clinical trials and can take two to three years from the date of filing, or even longer. In some cases, including in the case of our interbody spinal fusion devices which incorporate our CSC technology and our solid silicon nitride femoral head component, the FDA requires clinical data as part of the 510(k) clearance process.

It is possible that the FDA could raise questions about spinal fusion products or other medical device product candidates and could require us to perform additional studies on our products and product candidates. Even if the FDA permits us to use the 510(k) clearance process, we cannot assure you that the FDA will not require either supporting data from laboratory tests or studies that we have not conducted, or substantial supporting clinical data. If we are unable to use the 510(k) clearance process for any of our product candidates, are required to provide clinical data or laboratory data that we do not possess to support our 510(k) premarket notifications for any of these product candidates, or otherwise experience delays in obtaining or fail to obtain regulatory clearances, the commercialization of our product candidates in the United States will be delayed or prevented, which will adversely affect our ability to generate additional revenues. It also may result in the loss of potential competitive advantages that we might otherwise attain by bringing our products to market earlier than our competitors. Additionally, although the FDA allows modifications to be made to devices that have received 510(k) clearance with supporting documentation, the FDA may disagree with our decision to modify our cleared devices without submission of a new 510(k) premarket notification, subjecting us to potential product recall, field alerts and corrective actions. Any of these contingencies could adversely affect our business.

Similar to our compliance with U.S. regulatory requirements, we must obtain and comply with international requirements, in order to market and sell our products outside of the United States and we may only promote and market our products, if approved, as permitted by applicable regulatory authorities. There is no guarantee that we will receive the necessary regulatory approvals for our product candidates either inside the United States or internationally. If our product candidates do not receive necessary regulatory approvals, our business could be materially and adversely affected.

The safety of our products is not yet supported by long-term clinical data, and they may prove to be less safe and effective than our laboratory data indicate.

We obtained FDA clearance for each of our spinal fusion products that we currently manufacture for CTL Medical, and we have sought and intend to seek FDA clearance or approval through the FDA's 510(k) or PMA process and, where applicable, CE marking for our product candidates. The 510(k) clearance process is based on the FDA's agreement that a new product candidate is substantially equivalent to an already marketed product for which a PMA was not required. While most 510(k) premarket notifications do not require clinical data for clearance, the FDA may request that such data be provided. Long-term clinical data or marketing experience obtained after clearance may indicate that our products cause unexpected complications or other unforeseen negative effects. If this happens, we could be subject to the withdrawal of our marketing clearance and other enforcement sanctions by the FDA or other regulatory authority, product recalls, significant legal liability, significant negative publicity, damage

to our reputation and a dramatic reduction in our ability to sell our products, any one of which would have a material adverse effect on our business, financial condition and results of operations.

We may be required to conduct clinical trials to support regulatory approval of some of our product candidates. We have little experience conducting clinical trials, they may proceed more slowly than anticipated, and we cannot be certain that our product candidates will be shown to be safe and effective for human use.

In order to commercialize our product candidates in the United States, we must submit a PMA for some of these product candidates, which will require us to conduct clinical trials. We also plan to provide the FDA with clinical trial data to support some of our 510(k) premarket notifications. We will receive approval or clearance from the FDA to commercialize products requiring a clinical trial only if we can demonstrate to the satisfaction of the FDA, through well-designed and properly conducted clinical trials, that our product candidates are safe and effective and otherwise meet the appropriate standards required for approval or clearance for specified indications.

Clinical trials are complex, expensive, time consuming, uncertain and subject to substantial and unanticipated delays. Before we may begin clinical trials, we must submit and obtain approval for an investigational device exemption, or IDE, that describes, among other things, the manufacture of, and controls for, the device and a complete investigational plan. Clinical trials generally involve a substantial number of patients in a multi-year study. Because we do not have the experience or the infrastructure necessary to conduct clinical trials, we will have to hire one or more contract research organizations, or CROs, to conduct trials on our behalf. CRO contract negotiations may be costly and time consuming and we will rely heavily on the CRO to ensure that our trials are conducted in accordance with regulatory and industry standards. We may encounter problems with our clinical trials and any of those problems could cause us or the FDA to suspend those trials or delay the analysis of the data derived from them.

A number of events or factors, including any of the following, could delay the completion of our clinical trials in the future and negatively impact our ability to obtain FDA approval for, and to introduce our product candidates:

- failure to obtain financing necessary to bear the cost of designing and conducting clinical trials;
- failure to obtain approval from the FDA or foreign regulatory authorities to commence investigational studies;
- conditions imposed on us by the FDA or foreign regulatory authorities regarding the scope or design of our clinical trials;
- failure to find a qualified CRO to conduct our clinical trials or to negotiate a CRO services agreement on favorable terms;
- delays in obtaining or in our maintaining required approvals from institutional review boards or other reviewing entities at clinical sites selected for participation in our clinical trials;
- insufficient supply of our product candidates or other materials necessary to conduct our clinical trials;
- difficulties in enrolling patients in our clinical trials;
- negative or inconclusive results from clinical trials, or results that are inconsistent with earlier results, that necessitate additional clinical studies;
- failure on the part of the CRO to conduct the clinical trial in accordance with regulatory requirements;
- our failure to maintain a successful relationship with the CRO or termination of our contractual relationship with the CRO before completion of the clinical trials;
- serious or unexpected side effects experienced by patients in whom our product candidates are implanted; or
- failure by any of our third-party contractors or investigators to comply with regulatory requirements or meet other contractual obligations in a timely manner.

Our clinical trials may need to be redesigned or may not be completed on schedule, if at all. Delays in our clinical trials may result in increased development costs for our product candidates, which could cause our stock price to decline and limit our ability to obtain additional financing. In addition, if one or more of our clinical trials are delayed, competitors may be able to bring products to market before we do, and the commercial viability of our product candidates could be significantly reduced.

Our current and future relationships with third-party payers and current and potential customers in the United States and elsewhere may be subject, directly or indirectly, to applicable anti-kickback, fraud and abuse, false claims, transparency, health information privacy and security and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm administrative burdens and diminished profits and future earnings.

Our current and future arrangements with third-party payers and current and potential customers, including providers and physicians, as well as physician owned distributorships or PODs, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act, which may constrain the business or financial arrangements and relationships through which we sell, market and distribute our products. In addition, we may be subject to transparency laws and patient privacy regulations by U.S. federal and state governments and by governments in foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws and regulations that may affect our ability to operate include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under federal healthcare programs, such as Medicare and Medicaid;
- federal civil and criminal false claims laws and civil monetary penalty laws, including the federal False Claims Act, which impose criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their respective implementing regulations, which impose obligations on covered healthcare providers, health plans, and healthcare clearinghouses, as well as their business associates that create, receive, maintain or transmit individually identifiable health information for or on behalf of a covered entity, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;

- the Physician Payments Sunshine Act, which requires (i) manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to report annually to CMS information related to certain "payments or other transfers of value" made to physicians, which is defined to include doctors, dentists, optometrists, podiatrists and chiropractors, and teaching hospitals, with data collection beginning on August 1, 2013, (ii) applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held in such entities by physicians and their immediate family members, with data collection beginning on August 1, 2013, (iii) manufacturers to submit reports to CMS by March 31, 2014 and the 90th day of each subsequent calendar year, and (iv) disclosure of such information by CMS on a publicly available website beginning in September 2014; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payers, including private insurers; state and foreign laws that require medical device companies to comply with the medical device industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state and foreign laws that require medical device manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts. Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations may involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, including, without limitation, damages, fines, imprisonment, exclusion from participation in government healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations, which could have a material adverse effect on our business. If any of the physicians or other healthcare providers or entities with whom we expect to do business, including our collaborators, are found not to be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from participation in government healthcare programs, which could also materially affect our business.

Changes in effective tax rates or adverse outcomes resulting from examination of our income or other tax returns could adversely affect our results of operations and financial condition.

We are subject to taxes by the U.S. federal, state, local and foreign tax authorities, and our tax liabilities will be affected by the allocation of expenses to differing jurisdictions. Our future effective tax rates could be subject to volatility or adversely affected by a number of factors, including:

- changes in the valuation of our deferred tax assets and liabilities;
- expected timing and amount of the release of any tax valuation allowance;
- tax effects of equity-based compensation;
- changes in tax laws, regulations or interpretations thereof; or
- future earnings being lower than anticipated in jurisdictions where we have lower statutory tax rates and higher than anticipated earnings in jurisdictions where we have higher statutory tax rates.

We may also be subject to audits of our income, sales and other transaction taxes by U.S. federal, state, local and foreign taxing authorities. Outcomes from these audits could have an adverse effect on our operating results and financial condition.

Proposed legislation in the U.S. Congress, including changes in U.S. tax law, and the recently enacted Inflation Reduction Act of 2022 may adversely impact us and the value of common shares, pre-funded warrants, and Warrants.

Changes to U.S. tax laws (which changes may have retroactive application) could adversely affect us or holders of common shares, pre-funded warrants and Warrants. In recent years, many changes to U.S. federal income tax laws have been proposed and made, and additional changes to U.S. federal income tax laws are likely to continue to occur in the future.

The U.S. Congress is currently considering numerous items of legislation which may be enacted prospectively or with retroactive effect, which legislation could adversely impact our financial performance and the value of common shares, pre-funded warrants, and Warrants. Additionally, states in which we operate or own assets may impose new or increased taxes. If enacted, most of the proposals would be effective for the current or later years. The proposed legislation remains subject to change, and its impact on us and holders of common shares, pre-funded warrants, or Warrants is uncertain.

In addition, the Inflation Reduction Act of 2022 was recently signed into law and includes provisions that will impact the U.S. federal income taxation of corporations. Among other items, this legislation includes provisions that will impose a minimum tax on the book income of certain large corporations and an excise tax on certain corporate stock repurchases that would be imposed on the corporation repurchasing such stock. It is unclear how this legislation will be implemented by the U.S. Department of the Treasury and we cannot predict how this legislation or any future changes in tax laws might affect us or holders of common shares, pre-funded warrants or Warrants.

Recently enacted and future legislation may increase the difficulty and cost for us to obtain and monitor regulatory approval or clearance of our product candidates and affect the prices we may obtain for our products.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay clearance and/or approval of our product candidates, restrict or regulate post-clearance and post-approval activities and affect our ability to profitably sell our products and any product candidates for which we obtain marketing approval or clearance.

In addition, FDA regulations and guidance are often revised or reinterpreted by the FDA in ways that may significantly affect our business and our products. Any new regulations or revisions or reinterpretations of existing regulations may impose additional costs or lengthen review times of our products. Delays in receipt of or failure to receive regulatory clearances or approvals for our new products would have a material adverse effect on our business, results of operations and financial condition. In addition, the FDA is currently evaluating the 510(k) process and may make substantial changes to industry requirements, including which devices are eligible for 510(k) clearance, the ability to rescind previously granted 510(k) clearances and additional requirements that may significantly impact the process.

Among policy makers and payers in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access. In the United States, the medical device industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and

Education Affordability Reconciliation Act, or collectively the ACA, a sweeping law intended, among other things, to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for the healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms.

Among the provisions of the ACA of importance to our products and product candidates are:

- establishes a new Patient-Centered Outcomes Research Institute to oversee and identify priorities in comparative clinical effectiveness research in an effort to coordinate and develop such research; and

- implements payment system reforms including a national pilot program on payment bundling to encourage hospitals, physicians and other providers to improve the coordination, quality and efficiency of certain healthcare services through bundled payment models.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. For example, on January 2, 2013, former President Obama signed into law the American Taxpayer Relief Act of 2012, or the ATRA, which, among other things, further reduced Medicare payments to several providers, including hospitals, imaging centers and cancer treatment centers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. Moreover, certain legislative changes to and regulatory changes under the PPACA have occurred in the 115th United States Congress and under the Trump Administration. For example, on December 22, 2017, former President Trump signed a budget reconciliation act into law, which among other things, repealed the penalty for individuals who do not maintain minimum essential coverage, which was a central component of PPACA's approach to expanding coverage. On January 9, 2018, former President Trump signed the Bipartisan Budget Act of 2018, which, among other things, repealed the PPACA provision establishing an independent payment advisory board that would have submitted recommendations to reduce Medicare spending if projected Medicare spending exceeded a specified growth rate.

Additional legislative changes to and regulatory changes under the PPACA remain possible. We expect that other state and federal healthcare reform measures will be adopted in the future, any of which could reduce the number of patients with coverage or limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our products or additional pricing pressure.

In the European Union and some other international markets, the government provides health care at a low cost to consumers and regulates prices of healthcare products, patient eligibility or reimbursement levels to control costs for the government-sponsored health care system. Many countries are reducing their public expenditures and we expect to see strong efforts to reduce healthcare costs in international markets, including patient access restrictions, suspensions on price increases, prospective and possibly retroactive price reductions and other recoupments and increased mandatory discounts or rebates and recoveries of past price increases. These cost control measures could reduce our revenues. In addition, certain countries set prices by reference to the prices in other countries where our products are marketed. Thus, our inability to secure adequate prices in a particular country may not only limit the marketing of our products within that country but may also adversely affect our ability to obtain acceptable prices in other markets. This may create the opportunity for third-party cross border trade or influence our decision to sell or not to sell a product, thus adversely affecting our geographic expansion plans and revenues.

Risks Related to Our Intellectual Property and Litigation

If the combination of patents, trade secrets and contractual provisions that we rely on to protect our intellectual property is inadequate, our ability to commercialize our products successfully will be harmed, and we may not be able to operate our business profitably.

Our success depends significantly on our ability to protect our proprietary rights to the technologies incorporated in our products. We rely on a combination of patent protection, trade secret laws and nondisclosure, confidentiality and other contractual restrictions to protect our proprietary technology. However, these may not adequately protect our rights or permit us to gain or keep any competitive advantage.

The issuance of a patent is not conclusive as to its scope, validity or enforceability. The scope, validity or enforceability of our issued patents can be challenged in litigation or proceedings before the U.S. Patent and Trademark Office, or the USPTO, or foreign patent offices. In addition, our pending patent applications include claims to numerous important aspects of our products under development that are not currently protected by any of our issued patents. We cannot assure you that any of our pending patent applications will result in the issuance of patents to us. The USPTO or foreign patent offices may deny or require significant narrowing of claims in our pending patent applications. Patents issued as a result of the pending patent applications, if any, may not provide us with significant commercial protection or be issued in a form that is advantageous to us. Proceedings before the USPTO or foreign patent offices could result in adverse decisions as to the priority of our inventions and the narrowing or invalidation of claims in issued patents. The laws of some foreign countries may not protect our intellectual property rights to the same extent as the laws of the United States, if at all.

Our competitors may successfully challenge and invalidate or render unenforceable our issued patents, including any patents that may issue in the future, which could prevent or limit our ability to market our products and could limit our ability to stop competitors from marketing products that are substantially equivalent to ours. In addition, competitors may be able to design around our patents or develop products that provide outcomes that are comparable to our products but that are not covered by our patents.

We have also entered into confidentiality and assignment of intellectual property agreements with all of our employees, consultants and advisors as one of the ways we seek to protect our intellectual property and other proprietary technology. However, these agreements may not be enforceable or may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure or other breaches of the agreements.

In the event a competitor infringes upon any of our patents or other intellectual property rights, enforcing our rights may be difficult, time consuming and expensive, and would divert management's attention from managing our business. There can be no assurance that we will be successful on the merits in any enforcement effort. In addition, we may not have sufficient resources to litigate, enforce or defend our intellectual property rights.

We have no patent protection covering the composition of matter for our solid silicon nitride or for all of the components of the process we use for manufacturing our silicon nitride, and competitors may create silicon nitride formulations substantially similar to ours.

Although we have a number of U.S. and foreign patents and pending applications relating to our solid silicon nitride products or product candidates, we have no patent protection either for the composition of matter for our silicon nitride or for the processes of manufacturing solid silicon nitride. As a result, competitors may create silicon nitride formulations substantially similar to ours and use their formulations in products that may compete with our silicon nitride products, provided they do not violate our issued product patents. Although we have, and will continue to develop, significant know-how related to these processes, there can be no assurance that we will be able to maintain this know-how as trade secrets, and competitors may develop or acquire equally valuable or more valuable know-how related to the manufacture of silicon nitride.

We could become subject to intellectual property litigation that could be costly, result in the diversion of management's time and efforts, require us to pay damages, prevent us from marketing our commercially available products or product candidates and/or reduce the margins we may realize from our products that we may commercialize.

The medical devices industry is characterized by extensive litigation and administrative proceedings over patent and other intellectual property rights. Whether a product

infringes a patent involves complex legal and factual issues, and the determination is often uncertain. There may be existing patents of which we are unaware that our products under development may inadvertently infringe. The likelihood that patent infringement claims may be brought against us increases as the number of participants in the orthopedic market increases and as we achieve more visibility in the marketplace and introduce products to market.

Any infringement claim against us, even if without merit, may cause us to incur substantial costs, and would place a significant strain on our financial resources, divert the attention of management from our core business, and harm our reputation. In some cases, litigation may be threatened or brought by a patent holding company or other adverse patent owner who has no relevant product revenues and against whom our patents may provide little or no deterrence. If we were found to infringe any patents, we could be required to pay substantial damages, including triple damages if an infringement is found to be willful, and royalties and could be prevented from selling our products unless we obtain a license or are able to redesign our products to avoid infringement. We may not be able to obtain a license enabling us to sell our products on reasonable terms, or at all, and there can be no assurance that we would be able to redesign our products in a way that would not infringe those patents. If we fail to obtain any required licenses or make any necessary changes to our technologies or the products that incorporate them, we may be unable to commercialize one or more of our products or may have to withdraw products from the market, all of which would have a material adverse effect on our business, financial condition and results of operations.

In addition, in order to further our product development efforts, we have entered into agreements with orthopedic surgeons to help us design and develop new products, and we expect to enter into similar agreements in the future. In certain instances, we have agreed to pay such surgeons royalties on sales of products which incorporate their product development contributions. There can be no assurance that surgeons with whom we have entered into such arrangements will not claim to be entitled to a royalty even if we do not believe that such products were developed by cooperative involvement between us and such surgeons. In addition, some of our surgeon advisors are employed by academic or medical institutions or have agreements with other orthopedic companies pursuant to which they have agreed to assign or are under an obligation to assign to those other companies or institutions their rights in inventions which they conceive or develop or help conceive or develop.

There can be no assurance that one or more of these orthopedic companies or institutions will not claim ownership rights to an invention we develop in collaboration with our surgeon advisors or consultants on the basis that an agreement with such orthopedic company or institution gives it ownership rights in the invention or that our surgeon advisors on consultants otherwise have an obligation to assign such inventions to such company or institution. Any such claim against us, even without merit, may cause us to incur substantial costs, and would place a significant strain on our financial resources, divert the attention of management from our core business and harm our reputation.

We may be subject to damages resulting from claims that we have wrongfully used or disclosed alleged trade secrets of our competitors or are in breach of non-competition agreements with our competitors or non-solicitation agreements.

Some of our employees were previously employed at other medical device or ceramic companies, including our competitors and potential competitors. Many of our former distributors and potential distributors sell, or in the past have sold, products of our competitors. We may be subject to claims that either we, or these employees or distributors, have inadvertently or otherwise used or disclosed the trade secrets or other proprietary information of our competitors. In addition, we have been and may in the future be subject to claims that we caused an employee or sales agent to break the terms of his or her non-competition agreement or non-solicitation agreement. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management. If we fail in defending such claims, in addition to paying money damages, we may lose valuable intellectual property rights or personnel. A loss of key personnel or their work product could hamper or prevent our ability to commercialize products, which could have an adverse effect on our business, financial condition and results of operations.

If our advanced ceramic products or our product candidates conflict with the rights of others, we may not be able to manufacture or market our products or product candidates, which could have a material and adverse effect on us.

Our commercial success will depend in part on not infringing the patents or violating the other proprietary rights of third parties. Issued patents held by others may limit our ability to develop commercial products. All issued patents are entitled to a presumption of validity under the laws of the United States. If we need suitable licenses to such patents to permit us to develop or market our product candidates, we may be required to pay significant fees or royalties and we cannot be certain that we would even be able to obtain such licenses. Competitors or third parties may obtain patents that may cover subject matter we use in developing the technology required to bring our products to market, that we use in producing our products, or that we use in treating patients with our products. We know that others have filed patent applications in various jurisdictions that relate to several areas in which we are developing products. Some of these patent applications have already resulted in patents and some are still pending. If we were found to infringe any of these issued patents or any of the pending patent applications, when and if issued, we may be required to alter our processes or product candidates, pay licensing fees or cease activities. If use of technology incorporated into or used to produce our product candidates is challenged, or if our processes or product candidates conflict with patent rights of others, third parties could bring legal actions against us, in Europe, the United States and elsewhere, claiming damages and seeking to enjoin manufacturing and marketing of the affected products. Additionally, it is not possible to predict with certainty what patent claims may issue from pending applications. In the United States, for example, patent prosecution can proceed in secret prior to issuance of a patent, provided such application is not filed in foreign jurisdiction. For U.S. patent applications that are also filed in foreign jurisdictions, such patent applications will not publish until 18 months from the filing date of the application. As a result, third parties may be able to obtain patents with claims relating to our product candidates which they could attempt to assert against us. Further, as we develop our products, third parties may assert that we infringe the patents currently held or licensed by them, and we cannot predict the outcome of any such action.

There has been extensive litigation in the medical devices industry over patents and other proprietary rights. If we become involved in any litigation, it could consume a substantial portion of our resources, regardless of the outcome of the litigation. If these legal actions are successful, in addition to any potential liability for damages, we could be required to obtain a license, grant cross-licenses and pay substantial royalties in order to continue to manufacture or market the affected products.

We cannot assure you that we would prevail in any legal action or that any license required under a third-party patent would be made available on acceptable terms, or at all. Ultimately, we could be prevented from commercializing a product, or forced to cease some aspect of our business operations, as a result of claims of patent infringement or violation of other intellectual property rights, which could have a material and adverse effect on our business, financial condition and results of operations.

Risks Related to This Offering and Ownership of Our Securities

There is currently a limited market for our securities, and any trading market that exists in our securities may be highly illiquid and may not reflect the underlying value of our net assets or business prospects.

Although our Common Stock is traded on Nasdaq, there is currently a limited market for our Common Stock and an active market may never develop. Investors are cautioned not to rely on the possibility that an active trading market may develop.

The best efforts structure of this offering may have an adverse effect on our business plan.

The placement agent is offering the securities in this offering on a best efforts basis. The placement agent is not required to purchase any securities, but will use its best efforts to sell the securities offered. As a “best efforts” offering, there can be no assurance that the offering contemplated hereby will ultimately be consummated or will result in any proceeds being made available to us. The success of this offering will impact our ability to use the proceeds to execute our business plan. We may have insufficient capital to implement our business plan, potentially resulting in greater operating losses unless we are able to raise the required capital from alternative sources. There is no assurance that

alternative capital, if needed, would be available on terms acceptable to us, or at all.

Future sales of our Common Stock may depress our share price.

As of December 31, 2022, we had 542,146 shares of our Common Stock outstanding. Sales of a number of shares of Common Stock in the public market or issuances of additional shares pursuant to the exercise of our outstanding warrants, or the expectation of such sales or exercises, could cause the market price of our Common Stock to decline. We may also sell additional shares of Common Stock or securities convertible into or exercisable or exchangeable for Common Stock in subsequent public or private offerings or other transactions, which may adversely affect the market price of our Common Stock.

Our stockholders may experience substantial dilution in the value of their investment if we issue additional shares of our capital stock.

Our charter allows us to issue up to 250,000,000 shares of our Common Stock and up to 130,000,000 shares of preferred stock. To raise additional capital, we may in the future sell additional shares of our Common Stock or other securities convertible into or exchangeable for our Common Stock at prices that are lower than the prices paid by existing stockholders, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders, which could result in substantial dilution to the interests of existing stockholders. In addition, the Class C Warrants and Class D Warrants include a cashless exercise provision that could allow the holders of the Class C Warrants and Class D Warrants to exercise such warrants without paying any additional consideration and receive approximately 40% of the aggregate number of shares underlying the Class C Warrants and Class D Warrants.

Certain of our outstanding shares of convertible preferred stock and warrants contain full-ratchet anti-dilution protection, which may cause significant dilution to our stockholders.

As of December 31, 2022, we had outstanding 26 shares of Series B convertible preferred stock convertible into an aggregate of 3,104 shares of common stock, warrants issued in May 2018 that are exercisable for an aggregate of 3,790 shares of common stock, and warrants issued in October 2022 that are exercisable for an aggregate of 616,642 shares of common stock. The Series B convertible preferred stock, May 2018 warrants, and October 2022 warrants contain full-ratchet anti-dilution provisions which, subject to limited exceptions, would reduce the conversion price of the Series B preferred stock (and increase the number of shares issuable under the Series B preferred stock) and reduce the exercise price of the May 2018 warrants and October 2022 warrants in the event that we in the future issue common stock, or securities convertible into or exercisable to purchase common stock, at a price per share lower than the conversion price or exercise price then in effect. Our outstanding 26 shares of Series B preferred stock are, prior to this offering, convertible into 3,104 shares of Common Stock at a conversion price of $9.21 per share. The May 2018 warrants currently are exercisable at an exercise price of $9.21 per share. The October 2022 warrants are exercisable at an exercise price of $9.21 per share. These full ratchet anti-dilution provisions will likely be triggered by the issuance of the Units in this offering and may be triggered by the alternative cashless exercise provisions of the Class C Warrants and Class D Warrants, depending upon how the anti-dilution provisions contained in the Series B convertible preferred stock, May 2018 warrants, and October 2022 warrants are interpreted. Depending upon how such provisions are interpreted, the alternative cashless exercise provision contained in the Class C Warrants and Class D Warrants could potentially result in a significant reduction in the conversion or exercise price of the Series B convertible preferred stock, May 2018 warrants, and October 2022 warrants.

Our management will have broad discretion over the use of the net proceeds from this offering, you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Other than amounts required to be paid to certain lenders, our management will have broad discretion as to the use of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of commencement of this offering. Accordingly, you will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flows.

Your interest in our Company may be diluted as a result of this offering.

The shares issuable upon the exercise of the Warrants to be issued pursuant to the offering will dilute the ownership interest of stockholders not participating in this offering and holders of Warrants who have not exercised their Warrants.

Further, if you purchase Units in this offering you may suffer immediate and substantial dilution in the net tangible book value of our Common Stock.

This offering may cause the trading price of our Common Stock to decrease.

The number of shares of Common Stock underlying the securities we propose to issue and ultimately will issue if this offering is completed, may result in an immediate decrease in the market price of our Common Stock. This decrease may continue after the completion of this offering. We cannot predict the effect, if any, that the availability of shares for future sale represented by the Warrants issued in connection with the offering will have on the market price of our Common Stock from time to time.

Holders of Pre-Funded Warrants and Warrants will have no rights as a common stockholder until such holders exercise their Pre-Funded Warrants and Warrants, respectively, and acquire our Common Stock.

Until holders of Pre-Funded Warrants and Warrants acquire shares of our Common Stock upon exercise of the Pre-Funded Warrants and Warrants, as the case may be, holders of Pre-Funded Warrants and Warrants will have no rights with respect to the shares of our Common Stock underlying such Pre-Funded Warrants and Warrants. Upon exercise of the Pre-Funded Warrants and Warrants, the holders thereof will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

There is no public market for the Pre-Funded Warrants or Warrants in this offering.

There is no established public trading market for the Pre-Funded Warrants or Warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Pre-Funded Warrants or Warrants on any securities exchange or recognized trading system.

Absence of a public trading market for the Pre-Funded Warrants or Warrants may limit your ability to resell the Pre-Funded Warrants or Warrants.

There is no established trading market for the Pre-Funded Warrants or Warrants to be issued pursuant to this offering, and they will not be listed for trading on Nasdaq or any other securities exchange or market, and the Pre-Funded Warrants or Warrants may not be widely distributed. Purchasers of the Pre-Funded Warrants or Warrants may be unable to resell the Pre-Funded Warrants or Warrants or sell them only at an unfavorable price for an extended period of time, if at all.

The market price of our common stock may never exceed the exercise price of the Warrants issued in connection with this offering.

The Warrants being issued in connection with this offering become exercisable upon issuance and will expire five years from the date of issuance. The market price of our common stock may never exceed the exercise price of the Warrants prior to their date of expiration. Any Warrants not exercised by their date of expiration will expire worthless and we will be under no further obligation to the Warrant holder.

The Warrants contain features that may reduce your economic benefit from owning them.

For so long as you continue to hold warrants, you will not be permitted to enter into any short sale or similar transaction with respect to our common stock. This could prevent you from pursuing investment strategies that could provide you greater financial benefits from owning the warrant.

Since the Warrants are executory contracts, they may have no value in a bankruptcy or reorganization proceeding.

In the event a bankruptcy or reorganization proceeding is commenced by or against us, a bankruptcy court may hold that any unexercised Warrants are executory contracts that are subject to rejection by us with the approval of the bankruptcy court. As a result, holders of the Warrants may, even if we have sufficient funds, not be entitled to receive any consideration for their Warrants or may receive an amount less than they would be entitled to if they had exercised their Warrants prior to the commencement of any such bankruptcy or reorganization proceeding.

The exclusive jurisdiction, waiver of trial by jury, and choice of law clauses set forth in the Warrants to be issued to purchasers in this offering may have the effect of limiting a purchaser's rights to bring legal action against us and could limit a purchaser's ability to obtain a favorable judicial forum for disputes with us.

The Warrant provided for investors to consent to exclusive jurisdiction to courts located in New York, New York and provides for a waiver of the right to a trial by jury. Disputes arising under the Warrant are governed by Delaware and New York law, respectively. These provisions may have the effect of limiting the ability of investors to bring a legal claim against us due to geographic limitations and/or preference for a trial by jury and may limit an investor's ability to bring a claim in a judicial forum that it finds favorable for disputes with us. Alternatively, if a court were to find this exclusive forum provision inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business and financial condition.

We could be delisted from Nasdaq, which could seriously harm the liquidity of our stock and our ability to raise capital.

In January 2022, we received a notice from the Nasdaq Listing Qualifications Department (the "Staff") of the Nasdaq Stock Market LLC ("Nasdaq") stating that the bid price of the Company's common stock for the last 30 consecutive trading days had closed below the minimum $1.00 per share required for continued listing under Listing Rule 5550(a)(2). In November 2022, we received a notice from the Staff stating that the bid price of our common stock had closed below $0.10 per share for the preceding ten consecutive trading days, in contravention of Listing Rule 5810(3)(A)(iii). To date, we have been able to cure the deficiencies and have regained compliance with Rule 5550(a)(2) and 5810(3)(A)(iii) by effecting reverse stock splits. To maintain our Nasdaq listing we must continue to meet the continued listing requirement for including the minimum bid price requirement. If it ever appears to Staff that the Company will not be able to cure a deficiency, or if the Company is otherwise not eligible, the Staff will provide notice that our securities will be subject to delisting. There can be no assurance that the Company will be able to maintain compliance with Nasdaq requirements or will otherwise be in compliance with other Nasdaq listing criteria.

If we cease to be eligible to trade on the Nasdaq Capital Market:

- We may have to pursue trading on a less recognized or accepted market, such as the OTC Bulletin Board or the "pink sheets."
- The trading price of our common stock could suffer, including an increased spread between the "bid" and "asked" prices quoted by market makers.
- Shares of our common stock could be less liquid and marketable, thereby reducing the ability of stockholders to purchase or sell our shares as quickly and as inexpensively as they have done historically. If our stock is traded as a "penny stock," transactions in our stock would be more difficult and cumbersome.

- We may be unable to access capital on favorable terms or at all, as companies trading on alternative markets may be viewed as less attractive investments with higher associated risks, such that existing or prospective institutional investors may be less interested in, or prohibited from, investing in our common stock. This may also cause the market price of our common stock to decline.

The price of our common stock is volatile and is likely to continue to fluctuate due to reasons beyond our control.

The volatility of publicly traded company stocks, including shares of our common stock, often do not correlate to the operating performance of the companies represented by such stocks or our operating performance. Some of the factors that may cause the market price of our common stock to fluctuate include:

- the sentiment of retail investors (including as may be expressed on financial trading and other social media sites and online forums);
- the direct access by retail investors to broadly available trading platforms;
- the amount and status of short interest in our securities;
- access to margin debt;
- trading in options and other derivatives on our common stock and any related hedging;
- CTL's ability to sell silicon nitride based spinal fusion products and our cost of manufacturing such products for CTL;
- our ability to develop, obtain regulatory clearances or approvals for, and market new and enhanced product candidates on a timely basis;
- our ability to enter into OEM and private label partnership agreements and the terms of those agreements;
- our ability to develop products that are effective in inactivating the SARS-CoV-2 virus;
- changes in governmental regulations or in the status of our regulatory approvals, clearances or future applications;
- our announcements or our competitors' announcements regarding new products, product enhancements, significant contracts, number and productivity of distributors, number of hospitals and surgeons using products, acquisitions or strategic investments;
- announcements of technological or medical innovations for the treatment of orthopedic pathology;
- delays or other problems with the manufacturing of our products, product candidates and related instrumentation;

- volume and timing of orders for our products and our product candidates, if and when commercialized;
- changes in the availability of third-party reimbursement in the United States and other countries;
- quarterly variations in our or our competitors' results of operations;
- changes in earnings estimates or recommendations by securities analysts, if any, who cover our common stock;
- failure to meet estimates or recommendations by securities analysts, if any, who cover our stock;

- changes in the fair value of our derivative liabilities resulting from changes in the market price of our common stock, which may result in significant fluctuations in our quarterly and annual operating results;
- changes in healthcare policy in the United States and internationally;
- product liability claims or other litigation involving us;
- sales of a substantial aggregate number of shares of our common stock;
- sales of large blocks of our common stock, including sales by our executive officers, directors and significant stockholders;
- disputes or other developments with respect to intellectual property rights;
- changes in accounting principles;
- changes to tax policy; and
- general market conditions and other factors, including factors unrelated to our operating performance or the operating performance of our competitors.

These and other external factors may cause the market price and demand for our common stock to fluctuate substantially, which may limit or prevent our stockholders from readily selling their shares of our common stock and may otherwise negatively affect the liquidity of our common stock. In addition, in the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the company that issued the stock. If our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit regardless of the merits of the case or the eventual outcome. Such a lawsuit also would divert the time and attention of our management from running our company.

Securities analysts may not continue to provide coverage of our common stock or may issue negative reports, which may have a negative impact on the market price of our common stock.

Since completing our initial public offering of shares of our common stock in February 2014, a limited number of securities analysts have been providing research coverage of our common stock. If securities analysts do not continue to cover our common stock, the lack of research coverage may cause the market price of our common stock to decline. The trading market for our common stock may be affected in part by the research and reports that industry or financial analysts publish about our business. If one or more of the analysts who elect to cover us downgrade our stock, our stock price would likely decline rapidly. If one or more of these analysts cease coverage of us, we could lose visibility in the market, which in turn could cause our stock price to decline. In addition, under the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, and a global settlement among the Securities and Exchange Commission, or the SEC, other regulatory agencies and a number of investment banks, which was reached in 2003, many investment banking firms are required to contract with independent financial analysts for their stock research. It may be difficult for a company such as ours, with a smaller market capitalization, to attract independent financial analysts that will cover our common stock. This could have a negative effect on the market price of our stock.

Anti-takeover provisions in our organizational documents and Delaware law may discourage or prevent a change in control, even if an acquisition would be beneficial to our stockholders, which could affect our stock price adversely and prevent attempts by our stockholders to replace or remove our current management.

Our restated certificate of incorporation and restated bylaws contain provisions that could discourage, delay or prevent a merger, acquisition or other change in control of our company or changes in our board of directors that our stockholders might consider favorable, including transactions in which you might receive a premium for your shares. These provisions also could limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. Stockholders who wish to participate in these transactions may not have the opportunity to do so. Furthermore, these provisions could prevent or frustrate attempts by our stockholders to replace or remove management. These provisions:

- allow the authorized number of directors to be changed only by resolution of our board of directors;

- provide for a classified board of directors, such that not all members of our board will be elected at one time;
- prohibit our stockholders from filling board vacancies, limit who may call stockholder meetings, and prohibit the taking of stockholder action by written consent;
- prohibit our stockholders from making certain changes to our restated certificate of incorporation or restated bylaws except with the approval of holders of 75% of the outstanding shares of our capital stock entitled to vote;
- require advance written notice of stockholder proposals that can be acted upon at stockholders' meetings and of director nominations to our board of directors; and
- authorize our board of directors to create and issue, without prior stockholder approval, preferred stock that may have rights senior to those of our common stock and that, if issued, could operate as a "poison pill" to dilute the stock ownership of a potential hostile acquirer to prevent an acquisition that is not approved by our board of directors.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law, which may prohibit certain business combinations with stockholders owning 15% or more of our outstanding voting stock. Any delay or prevention of a change in control transaction or changes in our board of directors could cause the market price of our common stock to decline.

We do not intend to pay cash dividends.

We have never declared or paid cash dividends on our capital stock and we do not anticipate paying any cash dividends in the foreseeable future. We currently intend to retain all available funds and any future earnings for debt service and use in the operation and expansion of our business. In addition, the terms of any future debt or credit facility may preclude us from paying any dividends.

Our outstanding shares of Series B Convertible Preferred Stock, Series C Convertible Preferred Stock, Series D Convertible Preferred Stock and our outstanding common stock warrants are convertible and exercisable into shares of our common stock and when converted or exercised, the issuance of additional shares of common stock may result in downward pressure on the trading price of our common stock.

We have outstanding shares of Series B Convertible Preferred Stock, Series C Convertible Preferred Stock and Series D Convertible Preferred Stock that are each convertible into shares of common stock. We believe that as such holders convert their preferred shares into common stock, they will immediately sell their shares of common stock. The sale of such shares of common stock may result in downward pressure on the trading price of our common stock resulting in a lower stock price. Additionally, we have outstanding warrants to purchase shares of common stock. Many of these warrants have a cashless exercise provision that if exercised may also result in downward pressure on the trading price of our common stock and cause such price to decline.

Risks Related to Potential Litigation from Operating Our Business

We may become subject to potential product liability claims, and we may be required to pay damages that exceed our insurance coverage.

Our business exposes us to potential product liability claims that are inherent in the design, testing, manufacture, sale and distribution of our currently marketed products and each of our product candidates that we are seeking to introduce to the market. The use of orthopedic medical devices can involve significant risks of serious complications, including bleeding, nerve injury, paralysis, infection, and even death. Any product liability claim brought against us, with or without merit, could result in the increase of our product liability insurance rates or in our inability to secure coverage in the future on commercially reasonable terms, if at all. In addition, if our product liability insurance proves to be inadequate to pay a damage award, we may have to pay the excess of this award out of our cash reserves, which could significantly harm our financial condition. If longer-term patient results and experience indicate that our products or any component of a product causes tissue damage, motor impairment or other adverse effects, we could be subject to significant liability. A product liability claim, even one without merit, could harm our reputation in the industry, lead to significant legal fees, and result in the diversion of management's attention from managing our business.

Any claims relating to our improper handling, storage or disposal of biological or hazardous materials could be time consuming and costly.

Although we do not believe that the manufacture of our silicon nitride or non-silicon nitride products will involve the use of hazardous materials, it is possible that regulatory authorities may disagree or that changes to our manufacturing processes may result in such use. Our business and facilities and those of our suppliers and future suppliers may therefore be subject to foreign, federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of hazardous materials and waste products. We may incur significant expenses in the future relating to any failure to comply with environmental laws. Any such future expenses or liability could have a significant negative impact on our business, financial condition and results of operations.

Risks Related to Public Companies

We are a "smaller reporting company" and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

We are currently a "smaller reporting company" as defined in the Securities Exchange Act of 1934. Smaller reporting companies are able to provide simplified executive compensation disclosures in their filings, are exempt from the provisions of Section 404(b) of the Sarbanes-Oxley Act requiring that independent registered public accounting firms provide an attestation report on the effectiveness of internal control over financial reporting, and have certain other decreased disclosure obligations in their SEC filings, including, among other things, only being required to provide two years of audited financial statements in annual reports. We cannot predict whether investors will find our common stock less attractive because of our reliance on any of these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We incur substantial costs as a result of being a public company and our management expects to devote substantial time to public company compliance programs.

As a public company, we incur significant legal, insurance, accounting and other expenses, including costs associated with public company reporting. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment will result in increased general and administrative expenses and may divert management's time and attention from product development and commercialization activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to practice, regulatory authorities may initiate legal proceedings against us, and our business may be harmed. These laws and regulations could make it more difficult and costlier for us to obtain director and officer liability insurance for our directors and officers, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified executive officers and qualified members of our board of directors, particularly to serve on our audit and compensation committees. In addition, if we are unable to continue to meet the legal, regulatory and other requirements related to being a public company, we may not be able to maintain the listing of our common stock on The NASDAQ Capital Market, which would likely have a material adverse effect on the trading price of our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated herein by reference contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on our management's current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the Sections entitled "Business," "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations."

All statements, other than statements of historical fact, included or incorporated herein regarding our strategy, future operations, financial position, future revenues, projected costs, plans, prospects and objectives are forward-looking statements. Words such as "expect," "anticipate," "intend," "plan," "believe," "seek," "estimate," "think," "may," "could," "will," "would," "should," "continue," "potential," "likely," "opportunity" and similar expressions or variations of such words are intended to identify forward-looking statements but are not the exclusive means of identifying forward-looking statements. Examples of our forward-looking statements include:

- our ability to achieve sufficient market acceptance of any of our products or product candidates;
- our ability to enter into and maintain successful OEM arrangements with third parties;
- our perception of the growth in the size of the potential market for our products and product candidates;

- our estimate of the advantages of our silicon nitride technology platform;
- our ability to become a profitable biomaterial technology company;
- our ability to design, manufacture and commercialize armor plates for military, police and civilian use;
- Our ability to successfully integrate the recently acquired Technology Assessment & Transfer and develop and commercialize products arising from this acquisition;
- our estimates regarding our needs for additional financing and our ability to obtain such additional financing on suitable terms;
- our ability to succeed in obtaining FDA clearance or approvals for our product candidates;
- our ability to receive CE Marks for our product candidates;
- the timing, costs and other limitations involved in obtaining regulatory clearance or approval for any of our product candidates and product candidates and, thereafter, continued compliance with governmental regulation of our existing products and activities;
- our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others;
- our ability to obtain sufficient quantities and satisfactory quality of raw materials to meet our manufacturing needs;
- the availability of adequate coverage reimbursement from third-party payers in the United States;
- our estimates regarding anticipated operating losses, future product revenue, expenses, capital requirements and liquidity;
- our ability to maintain and continue to develop our sales and marketing infrastructure;
- our ability to enter into and maintain suitable arrangements with an adequate number of distributors;
- our manufacturing capacity to meet future demand;
- our ability to develop effective and cost-efficient manufacturing processes for our products;
- our reliance on third parties to supply us with raw materials and our non-silicon nitride products and instruments;
- the safety and efficacy of products and product candidates;
- potential changes to the healthcare delivery systems and payment methods in the United States or internationally;
- our ability to attract and retain a qualified management team, engineering team, sales and marketing team, distribution team, and other qualified personnel and advisors.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward- looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward- looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

This prospectus and the documents incorporated herein by reference also refer to estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

USE OF PROCEEDS

We estimate that the net proceeds from the Offering will be approximately $10.9 million, after deducting cash expenses relating to this offering payable by us estimated at approximately $1.2 million, including placement agent fees and expenses which include fees payable to Ascendiant Capital Markets, LLC (“Ascendiant”), for certain financial advisor services provided in connection with the Offering, and excluding any proceeds received upon exercise of any Warrants.

We intend to use the net proceeds from the Offering for general corporate purposes, which may include research and development expenses, capital expenditures, working capital and general and administrative expenses, and potential acquisitions of or investments in businesses, products and technologies that complement our business, although we have no present commitments or agreements to make any such acquisitions or investments as of the date of this prospectus. We expect to use any proceeds we receive from the exercise of Warrants for substantially the same purposes and in substantially the same manner. Pending these uses, we intend to invest the funds in short-term, investment grade, interest-bearing securities. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us.

Our management will have broad discretion as to the allocation of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of commencement of this offering.

CAPITALIZATION

The following table sets forth our actual cash and cash equivalents and capitalization, each as of September 30, 2022, and as adjusted to give effect to the issuance and sale of securities in this offering at a public offering price of $5.60 per unit including common stock and $5.5999 per unit including a pre-funded warrant, and an aggregate offering amount of $10.9 million, after deducting the cash placement agent fees and estimated cash offering expenses payable by us. The below assumes that no warrants are exercised.

The as adjusted information set forth below is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering determined at pricing. You should read this information together with our consolidated financial statements.

	As of September 30, 2022 (dollars in thousands)	
	Actual	As Adjusted
Cash and cash equivalents	$ 4,779	$ 15,679
Stockholders' equity:		
Preferred stock, $0.001 par value; 130,000,000 shares authorized		
Series B convertible preferred stock, $0.01 par value, 26 shares issued and outstanding		
Series C convertible preferred stock, $0.01 par value, 50 shares issued and outstanding		
Common stock, $0.001 par value; 250,000,000 shares authorized; 247,293 shares issued and outstanding	3	25
Additional paid-in capital	267,910	278,788
Accumulated deficit	(258,498)	(258,498)
Total stockholders' equity	9,415	20,315

Except as otherwise noted, all information in this prospectus reflects and assumes no exercise of the common warrants issued in this offering. The above discussion and table are based on 247,293 shares of common stock outstanding as of September 30, 2022 and excludes:

- 11,909 shares of our common stock issuable upon the exercise of stock options, with a weighted-average exercise price of $238 per share, and vesting of restricted stock units;
- 11,157 shares of common stock issuable upon the exercise of outstanding warrants issued as of September 30, 2022;
- 2,823 shares of our common stock issuable, which may be a larger number of shares of common stock depending upon how the Series B convertible preferred stock anti-dilution provision is interpreted, upon the conversion of 26 shares of series B convertible preferred stock outstanding as of September 30, 2022;
- 338 shares of our common stock issuable upon the conversion of 50 shares of series C convertible preferred stock outstanding as of September 30, 2022;
- 294,663 shares of our common stock issued since September 30, 2022 upon the conversion of 4,450 shares of series D convertible preferred stock issued in our October 2022 Rights Offering;
- 13,641 shares of our common stock issuable upon the conversion of 206 shares of series D convertible preferred stock issued in our October 2022 Rights Offering;
- 308,320 shares of our common stock issuable upon the exercise of Class A Warrants issued in our October 2022 Rights Offering; and
- 308,320 shares of our common stock issuable upon the exercise of Class B Warrants issued in our October 2022 Rights Offering.

MARKET PRICE AND DIVIDEND POLICY

Our shares of common stock are currently quoted on The Nasdaq Capital Market under the symbol "SINT". On February 2, 2023, the last reported sales price of our common stock on Nasdaq was $8.08.

Holders of Record

As of January 23, 2023, we had approximately 158 holders of record of our common stock. Because many of our shares of common stock are held by brokers and other institutions on behalf of stockholders, this number is not indicative of the total number of stockholders represented by these stockholders of record.

Dividends

We have not declared or paid dividends to stockholders since inception and do not plan to pay cash dividends in the foreseeable future. We currently intend to retain earnings, if any, to finance our growth.

Issuer Purchases of Equity Securities

None

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our consolidated financial statements included elsewhere in this prospectus. This discussion and analysis contains forward-looking statements based upon current beliefs, plans, expectations, intentions and projections that involve risks, uncertainties and assumptions, such as statements regarding our plans, objectives, expectations, intentions and projections. Our actual results and the timing of selected events could differ materially from those anticipated in these forward-looking statements as a result of several factors, including those set forth under the "Risk Factors" section herein. We encourage you to review the information in the "Special Note Regarding Forward-Looking Statements" and "Risk Factors" sections in this prospectus.

Overview

We are an advanced materials company that develops and commercializes advanced ceramics for biomedical, technical, and antipathogenic applications. The core strength of SINTX Technologies is the manufacturing, research, and development of advanced ceramics for external partners.

Biomedical Applications: Since our inception, we have been focused on medical grade silicon nitride. SINTX silicon nitride products are biocompatible, bioactive, antipathogenic, and have shown superb bone affinity. Spinal implants made from SINTX silicon nitride have been successfully implanted in humans since 2008 in the US, Europe, Brazil, and Taiwan. This established use, along with its inherent resistance to bacterial adhesion and bone affinity – mean that it may also be suitable in other fusion device applications such as arthroplasty implants, foot wedges, and dental implants. Bacterial infection of any biomaterial implants is always a concern. SINTX silicon nitride is inherently resistant to bacterial colonization and biofilm formation, making it antibacterial. SINTX silicon nitride products can be polished to a smooth and wear-resistant surface for articulating applications, such as bearings for hip and knee replacements.

We believe that silicon nitride has a superb combination of properties that make it suited for long-term human implantation. Other biomaterials are based on bone grafts, metal alloys, and polymers- all of which have well-known practical limitations and disadvantages. In contrast, silicon nitride has a legacy of success in the most demanding and extreme industrial environments. As a human implant material, silicon nitride offers bone ingrowth, resistance to bacterial and viral infection, ease of diagnostic imaging, resistance to corrosion, and superior strength and fracture resistance, among other advantages, all of which claims are validated in our large and growing inventory of peer-reviewed, published literature reports. We believe that our versatile silicon nitride manufacturing expertise positions us favorably to introduce new and innovative devices in the medical and non-medical fields.

In June 2022, we acquired Technology Assessment and Transfer, Inc. (TA&T), a nearly 40-year-old business with a mission to transition advanced materials and process

technologies from a laboratory environment to commercial products and services. TA&T has supplied ceramics for use in several biomedical applications. These products were made via 3D printing and include components for surgical instruments as well as conceptual and prototype dental implants.

Technical Applications: It is our belief that our silicon nitride has the best combination of mechanical, thermal, and electrical properties of any technical ceramic material. It is a high-performance technical ceramic with high strength, toughness, and hardness, and is extremely resistant to thermal shock and impact. It is also an electrically insulating ceramic material. Typically, it is used in applications where high load-bearing capacity, thermal stability, and wear resistance are required. We have obtained AS9100D certification and ITAR registration to facilitate entry into the aerospace portion of this market.

We recently entered the ceramic armor market through the purchase of assets from B4C, LLC and a technology partnership with Precision Ceramics USA. We intend to develop and manufacture high-performance ceramics for personnel, aircraft, and vehicle armor including a 100% Boron Carbide material for ultimate lightweight performance in ballistic applications, and a composite material made of Boron Carbide and Silicon Carbide for exceptional multi-hit performance against ballistic threats. We have signed a 10-year lease at a building near its headquarters in Salt Lake City, UT to house development and manufacturing activities for SINTX Armor.

TA&T's primary area of expertise is material processing and fabrication know how for a broad spectrum of monolithic ceramic, ceramic composite, and coating materials. Primary technologies include Additive Manufacturing (3D Printing) of ceramics and metals, low-cost fabrication of fiber reinforced ceramic matrix composites (CMCs) and refractory chemical vapor deposited (CVD) coatings, transparent ceramics for ballistic armor and optical applications, and magnetron sputtered (PVD) coatings for lubrication, wear resistance and environmental barrier coatings for CMCs. TA&T also provides a host of services that include 3D printing, PVD-CVD coatings, material processing-CMCs, CIP, PS, HP, HIP, and material characterization for powders and finished parts-TGA/DSC, PSD. SA, Dilatometry, UV-VIS and FTIR transmission, haze and clarity.

Antipathogenic Applications: Today, there is a global need to improve protection against pathogens in everyday life. SINTX believes that by incorporating its unique composition of silicon nitride antipathogenic powder into products such as face masks, filters, and wound care devices, it is possible to manufacture surfaces that inactivate pathogens, thereby limiting the spread of infection and disease. The discovery in 2020 that SINTX silicon nitride inactivates SARS-CoV-2, the virus which causes the disease COVID-19, has opened new markets and applications for our material and we have refocused many of our resources on these opportunities.

We presently manufacture advanced ceramic powders and components in our manufacturing facilities based in Salt Lake City, Utah.

Components of our Results of Operations

We manage our business within one reportable segment, which is consistent with how our management reviews our business, makes investment and resource allocation decisions and assesses operating performance.

Revenue

We derive our product revenue primarily from the manufacture and sale of spinal fusion products used in the treatment of spine disorders to CTL, with whom we entered into a 10-year exclusive sales agreement in October 2018. We are currently pursuing other sales opportunities for silicon nitride products outside the spinal fusion application and have shipped new orders for these products. In 2021, we made progress in diversifying our revenue by selling a composite product of silicon nitride and PEEK as well as products for the industrial silicon nitride market, the ceramic armor market, and for the antipathogenic market. The acquisition of TA&T brings revenue from multiple markets that we have previously not participated in. We generally recognize revenue from sales where control transfers at a point in time as the title and risk of loss passes to the customer, which is at the time the product is shipped. In general, our customer does not have rights of return or exchange.

We believe our product revenue will increase as we secure opportunities to manufacture third party products with silicon nitride, launch and generate revenue from our ceramic armor products, and as we continue to introduce new products into the market.

We derive grant and contract revenue from awards provided by governmental agencies.

Cost of Revenue

The expenses that are included in cost of revenue include all in-house manufacturing costs for the products we manufacture.

Gross Profit

Our gross profit measures our product revenue relative to our cost of revenue. We expect our gross profit percentage to decrease as we expand the penetration of our silicon nitride technology platform through OEM and private label partnerships, which offer additional avenues for the adoption of silicon nitride. Prior to the sale of our retail spine implant business, our revenues and gross profits were based on our retail sales. With the focus on OEM and private label partnerships, the margins are lower, thus causing the decrease in our gross profit percentage.

Research and Development Expenses

Our research and development costs are expensed as incurred. Research and development costs consist of engineering, product development, clinical trials, test-part manufacturing, testing, developing and validating the manufacturing process, manufacturing, facility and regulatory-related costs. Research and development expenses also include employee compensation, employee and non-employee stock-based compensation, supplies and materials, consultant services, and travel and facilities expenses related to research and development activities.

We expect to incur additional research and development costs as we continue to develop new medical devices, industrial and ceramic armor products, product candidates for antipathogenic applications, and other products which may increase our total research and development expenses.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries, benefits and other related costs, including stock-based compensation for certain members of our executive team and other personnel employed in finance, compliance, administrative, information technology, customer service, executive and human resource departments. General and administrative expenses also include other expenses not part of the other cost categories mentioned above, including facility expenses and professional fees for accounting and legal services.

COMPARISON OF THE THREE AND NINE MONTHS ENDED SEPTEMBER 30, 2022 AND 2021

RESULTS OF OPERATIONS

The following is a tabular presentation of our unaudited condensed consolidated operating results for the three and nine months ended September 30, 2022 and 2021 (*in thousands*):

	Three Months Ended September 30,		$	%	Nine Months Ended September 30,		$	%
	2022	2021	Change	Change	2022	2021	Change	Change
Product revenue	$ 173	$ 239	$ (66)	-28%	$ 354	$ 441	$ (87)	-20%
Grant and contract revenue	253	-	253	100%	442	-	442	100%
Total revenue	426	239	187	78%	796	441	355	80%
Cost of revenue	89	190	(101)	-53%	235	324	(89)	-27%
Gross profit	337	49	288	588%	561	117	444	379%
Operating expenses:								
Research and development	1,523	1,603	(80)	-5%	4,651	4,402	249	6%
General and administrative	1,069	933	136	15%	2,918	2,791	127	5%
Sales and marketing	291	338	(47)	-14%	1,023	953	70	7%
Grant and contract expenses	247	-	247	100%	423	-	423	100%
Total operating expenses	3,130	2,874	256	9%	9,015	8,146	869	11%
Loss from operations	(2,793)	(2,825)	32	-1%	(8,454)	(8,029)	(425)	5%
Other income (expense)	69	482	(413)	-86%	373	854	(481)	-56%
Net loss before taxes	(2,724)	(2,343)	(381)	16%	(8,081)	(7,175)	(906)	13%
Provision for income taxes	-	-	-		-	-	-	
Net loss	$ (2,724)	$ (2,343)	$ (381)	16%	$ (8,081)	$ (7,175)	$ (906)	13%

Revenue

For the three months ended September 30, 2022, and 2021 total product revenue was relatively unchanged at $0.2 million. During the quarter ended September 30, 2022 the Company received grant and contract revenue of $0.3 million. Grant and contract revenue did not exist during the same period of the prior year.

For the nine months ended September 30, 2022, and 2021 total product revenue was relatively unchanged at $0.4 million. During the quarter ended September 30, 2022 the Company received grant and contract revenue of $0.4 million. Grant and contract revenue did not exist during the same period of the prior year.

Cost of Revenue and Gross Profit

For the three months ended September 30, 2022, our cost of revenue decreased $0.1 million, or 53%, as compared to the same period in 2021. This decrease is primarily attributed to a decrease in product revenue, and a change in the mix of products being sold. Gross profit increased $0.3 million or 588%. This increase in gross profit is attributed to the increase in grant and contract revenue. Gross profit margin percentage totaled 79% and 21% for the three months ended September 30 for 2022 and 2021, respectively.

For the nine months ended September 30, 2022, our cost of revenue decreased $0.1 million, or 27%, as compared to the same period in 2021. This decrease is primarily attributed to a decrease in product revenue. Gross profit increased $0.4 million or 379%. This increase in gross profit is attributed to the increase in grant and contract revenue. Gross profit margin percentage totaled 70% and 27% for the nine months ended September 30 for 2022 and 2021, respectively.

Research and Development Expenses

For the three months ended September 30, 2022, research and development expenses increased by $0.1 million, or 5%, as compared to the same period in 2021. This increase was primarily attributable to a general increase in products and services due to price inflation.

For the nine months ended September 30, 2022, research and development expenses increased $0.2 million, or 6%, as compared to the same period in 2021. This increase was primarily attributable to a general increase in products and services due to price inflation.

General and Administrative Expenses

For the three months ended September 30, 2022, general and administrative expenses increased $0.1 million, or 15%, as compared to the same period in 2021. This increase is primarily due to the increase in patent application expenses.

For the nine months ended September 30, 2022, general and administrative expenses increased $0.1 million, or 5%, as compared to the same period in 2021. This increase is primarily due to the increase in patent application expenses.

Sales and Marketing Expenses

For the three months ended September 30, 2022, sales and marketing expenses decreased $0.1 million, or 14%, as compared to the same period in 2021. The decrease is primarily attributable to a decrease in outside consulting services.

For the nine months ended September 30, 2022, sales and marketing expenses increased $0.1 million, or 7%, as compared to the same period in 2021. This increase was primarily attributable to an overall increase in marketing activities to generate interest in and exposure to the Company's potential new product lines.

Grant and Contract Expenses

For the three months ended September 30, 2022, the Company incurred grant and contract expenses of $0.2 million. The Company had no grant and contract expenses for the same period in 2021 due to the Company being awarded federal grant and contract income subsequent to the third quarter of 2021 (and incurring related grant and contract expense during 2022 and incurring none during 2021).

For the nine months ended September 30, 2022, the Company incurred grant and contract expenses of $0.4 million. The Company had no grant and contract expenses for the same period in 2021 due to the Company being awarded federal grant and contract income subsequent to the third quarter of 2021 (and incurring related grant and contract

expense during 2022 and incurring none during 2021).

Other Income, Net

For the three months ended September 30, 2022, other income decreased $0.4 million, or 86%, as compared to the same period in 2021. This decrease was primarily due to the incurring of a change in the fair value of the derivative liabilities in the amount of $0.4 million.

For the nine months ended September 30, 2022, other income decreased $0.5 million, or 56%, as compared to the same period in 2021. This decrease was primarily due to other income of $0.4 million associated with the forgiveness of the 2020 PPP Loan in the prior year and a change in interest income of $0.1 million.

Liquidity and Capital Resources

The condensed consolidated financial statements have been prepared assuming the Company will continue to operate as a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business, and does not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result from uncertainty related to its ability to continue as a going concern within one year from the date of issuance of these condensed consolidated financial statements.

For the nine months ended September 30, 2022, and 2021, the Company incurred a net loss of $8.1 million and $7.2 million, respectively, and used cash in operating activities of $8.1 million and $7.7 million, respectively. The Company had an accumulated deficit of $258.5 million and $250.4 million as of September 30, 2022, and December 31, 2021, respectively. The Company's operations have been principally financed from proceeds from the issuance of preferred and common stock and, to a lesser extent, cash generated from product sales. It is anticipated that the Company will continue to generate operating losses and use cash in operations. The Company's continuation as a going concern is dependent upon its ability to increase sales, and/or raise additional funds through the capital markets. Whether and when the Company can attain profitability and positive cash flows from operations or obtain additional financing is uncertain.

The Company is actively generating additional scientific and clinical data to have it published in leading industry publications. We believe the publication of such data would help sales efforts as the Company approaches new prospects. The Company is also making additional changes to the sales strategy, including a focus on revenue growth by expanding the use of silicon nitride in other areas outside of spinal fusion applications. For instance, results from an independent study demonstrated the potential anti-viral properties of our silicon nitride. We believe that we may be able to apply our silicon nitride powder to personal protection products, such as face masks, gowns and gloves, resulting in inactivation of viruses that come into contact with the items.

The Company has common stock that is publicly traded and has been able to successfully raise capital when needed since the date of the Company's initial public offering in February 2014.

On February 25, 2021, the Company entered into an Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim, pursuant to which we may sell from time to time, shares of its our common stock, $0.01 par value per share, having an aggregate offering price of up to $2.0 million through Maxim, as agent. No shares have been sold under the 2021 Distribution Agreement as of September 30, 2022.

On October 1, 2018, the Company sold the retail spine implant business to CTL Medical. The sale included a $6 million noninterest bearing note receivable payable over a 36-month term. CTL Medical has paid this note in full, and the Company does not expect any future cashflows associated with the note.

Although the Company is seeking to obtain additional equity and/or debt financing, such funding is not assured and may not be available to the Company on favorable or acceptable terms and may involve significant restrictive covenants. Any additional equity financing is also not assured and, if available to the Company, will most likely be dilutive to its current stockholders. If the Company is not able to obtain additional debt or equity financing on a timely basis, the impact on the Company will be material and adverse.

These uncertainties create substantial doubt about our ability to continue as a going concern. The condensed consolidated financial statements do not include any adjustments that might result from the outcome of these uncertainties.

Risks Related to COVID-19 Pandemic

The COVID-19 pandemic is affecting the United States and global economies and may affect the Company's operations and those of third parties on which the Company relies. In response to the spread of COVID-19 and to ensure safety of employees and continuity of business operations, we temporarily restricted access to the Salt Lake City facility, with our administrative employees continuing their work remotely and limited the number of staff in our manufacturing facility. We implemented protective measures such as wearing of face masks, maintaining social distancing, and additional cleaning. Beginning in 2021, we have offered vaccination incentives. While the potential economic impact brought by, and the duration of, the COVID-19 pandemic is difficult to assess or predict, the impact of the COVID-19 pandemic on the global financial markets may reduce the Company's ability to access capital, which could negatively impact the Company's short-term and long-term liquidity. The ultimate impact of the COVID-19 pandemic is highly uncertain and subject to change. The Company does not yet know the full extent of potential delays or impacts on its business, financing or other activities or on healthcare systems or the global economy as a whole. However, these effects could have a material impact on the Company's liquidity, capital resources, operations and business and those of the third parties on which we rely.

Correction of an Immaterial Error

During the first quarter of 2022 the Company identified an error related to the removal of a loan obligation and the recording of other income for forgiveness of debt totaling approximately $0.5 million, which forgiveness was recorded on November 24, 2021. The Company has determined that the Company should not have removed the loan obligation and recorded approximately $0.5 million of other income in the financial statements as of December 31, 2021, and for the year then ended. The error affected the 2021 net loss attributable to common stockholders and net loss per share—basic and diluted. The error also affected total liabilities and accumulated deficit (and total stockholders' equity) as of December 31, 2021. The error did not affect 2021 cash flows from operating activities and total cash flow. The December 31, 2021, consolidated balance sheet and the December 31, 2021, balance in the statement stockholders' equity contained in these financial statements have been restated. The change resulted a reduction of stockholders' equity of $0.5 million as of December 31, 2021.

Cash Flows

The following table summarizes, for the periods indicated, cash flows from operating, investing and financing activities (in thousands) – unaudited:

	Nine Months Ended September 30,	
	2022	**2021**
Net cash used in operating activities	$ (8,180)	$ (7,747)
Net cash provided by (used in) investing activities	(805)	(1,122)
Net cash provided by (used in) financing activities	(509)	701
Net decrease in cash	$ (9,494)	$ (8,168)

Net Cash Used in Operating Activities

Net cash used in operating activities was $8.1 million during the nine months ended September 30, 2022, compared to $7.7 million used during the nine months ended September 30, 2021, an increase of $0.4 million. The increase in cash used for operating activities during 2022 was primarily due to changes in the movement of working capital items during 2022 as compared to the same period in 2021 as follows: a $0.4 million increase in cash used in accounts payable, a $0.2 million increase in cash used in prepaid expenses, a $0.1 million increase in cash used in payments on operating lease liability, all offset by a $0.2 million increase in cash provided by accounts receivable, and a $0.1 million decrease in cash used in inventory.

Net Cash Used in Investing Activities

Net cash used in investing activities was $0.8 million during the nine months ended September 30, 2022, compared to $1.1 million in cash provided by investing activities during the same period in 2021, a decrease of $0.3 million. The decrease in cash used in investing activities during 2022 was primarily due to a $2.1 million decrease in cash used to obtain property and equipment, a $0.3 million increase in acquisition net of cash acquired, offset by the decrease in cash received of $1.9 million from the proceeds from notes receivable in 2021 and a $0.2 million decrease in cash received for the sale of property and equipment.

Net Cash Provided by (Used in) Financing Activities

Net cash used in financing activities was $0.5 million during the nine months ended September 30, 2022, compared to $0.7 million provided by financing activities during the same period in 2021. The $1.2 million decrease to net cash provided by financing activities was primarily attributable to $0.5 million in repayment of a PPP loan in the current year, $0.5 million in proceeds from a PPP loan and $0.2 million in proceeds from the exercise of warrants for cash in the prior year.

Indebtedness

2020 PPP Loan

On April 28, 2020, the Company received funding under a Paycheck Protection Program ("PPP") loan (the "PPP Loan") from First State Community Bank (the "Lender"). The principal amount of the PPP Loan was $0.4 million. The PPP was established under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and is administered by the U.S. Small Business Administration (the "SBA"). Loans made under the PPP may be partially or fully forgiven if the recipient complies with the provisions of the CARES Act, including the use of PPP Loan proceeds for payroll costs, rent, utilities and other expenses, provided that such amounts are incurred during a 24-week period that commenced on April 28, 2020 and at least 60% of any forgiven amount has been used for covered payroll costs as defined by the CARES Act. On January 5, 2021, the Lender provided notice to the Company that the principal amount and accrued interest had been forgiven. The Company removed the PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.4 million. The SBA has until January of 2027 to audit the Company's compliance with the CARES Act relating to the PPP Loan.

2021 PPP Loan

On March 15, 2021, the Company received funding under the SBA Second Draw Program under the Paycheck Protection Program ("2021 PPP") (the "2021 PPP Loan") from the Lender. The principal amount of the 2021 PPP Loan is $0.5 million. The Company received notice on November 24, 2021, that the principal amount and accrued interest had been forgiven. The Company removed the 2021 PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.5 million.

Since receiving the 2021 PPP Loan and learning that the principal amount of the loan and accrued interest had been forgiven, The Company determined that the Company should not have removed the loan obligation and recorded approximately $0.5 million of other income in the financial statements as of December 31, 2021, and for the year then ended. As a result, the Company has repaid the loan together with processing fees and interest.

Business Loan

On July 20, 2021, TA&T, entered into a Loan Authorization and Agreement in the amount of approximately $350,000 (the "Business Loan"). Under the Business Loan, the Company will make monthly installment payments, including principal and interest, of $1,754. Payments are to begin 18 months from the date of the loan. The balance of principal and interest is payable 30 years from July 20, 2021. The Business Loan bears interest at a rate of 3.75% per annum. The Business Loan is secured by a general security interest in all of the assets of TA&T. The Business Loan contains other standard provisions that are customary of loans of this type.

Related Party Debt

TA&T is obligated to repay certain personal loans made by the founders of TA&T to TA&T prior to SINTX's acquisition of TA&T (the Personal Loans"). The total amount of the Personal Loans at September 30, 2022 was approximately $350,000. The Company agreed to repay the outstanding balance of the Personal Loans in (i) 24 equal monthly installments beginning September 1, 2022 and each month thereafter until paid in full as one prior owner's portion of the Personal Loans totaling $157,000, and (ii) for the other owner's portion of the Personal Loans totaling $193,000, $100,000 of which was recorded in accrued liabilities at September 30, 2022. The remaining $249,000 is to be paid in 12 equal monthly installments beginning September 1, 2022. The related party debt in not collateralized and has no interest rate.

Wells Fargo Line of Credit

Prior to SINTX's acquisition of TA&T, TA&T entered into a revolving line of credit with Wells Fargo. As of September 30, 2022, the line of credit with Wells Fargo had an outstanding balance of $47,000.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements, as defined in Item 303(a)(4) of Regulation S-K.

Critical Accounting Policies and Estimates

A summary of our significant accounting policies and estimates is discussed in Management's Discussion and Analysis of Financial Condition and Results of Operations and in Note 1 to our consolidated financial statements for the year ended December 31, 2021. There were no material changes to those policies for the three months ended September 30, 2022. The preparation of the consolidated financial statements in accordance with U.S. generally accepted accounting principles requires us to make judgments, estimates and assumptions regarding uncertainties that affect the reported amounts of assets and liabilities. Significant areas of uncertainty that require judgments, estimates and assumptions include the accounting for income taxes and other contingencies as well as valuation of derivative liabilities, asset impairment and collectability of accounts receivable. We use historical and other information that we consider to be relevant to make these judgments and estimates. However, actual results may differ from those estimates and assumptions that are used to prepare our condensed consolidated financial statements.

New Accounting Pronouncements

See discussion under Note 1, *Organization and Summary of Significant Accounting Policies,* to the Condensed Consolidated Financial Statements included herein for information on new accounting pronouncements.

COMPARISON OF THE YEAR ENDED DECEMBER 31, 2021 TO THE YEAR ENDED DECEMBER 31, 2020

Results of Operations

Year Ended December 31, 2021 Compared to the Year Ended December 31, 2020

The following table sets forth, for the periods indicated, our results of operations for the years ended December 31, 2021 and 2020 (dollars, in thousands):

	Year Ended December 31,			
	2021	2020	$ Change	% Change
Product revenue	$ 606	$ 594	$ 12	2%
Costs of revenue	449	475	(26)	-5%
Gross profit	157	119	38	32%
Operating expenses:				
Research and development	5,886	4,808	1,078	22%
General and administrative	3,603	3,132	471	15%
Sales and marketing	1,288	683	605	89%
Total operating expenses	10,777	8,623	2,154	25%
Loss from operations	(10,620)	(8,504)	(2,116)	25%
Other income, net	1,845	1,475	370	25%
Net loss before income taxes	(8,775)	(7,029)	(1,746)	25%
Provision for income taxes	-	-	-	-%
Net loss	$ (8,775)	$ (7,029)	$ (1,746)	25%

Product Revenue

Total product revenue was $0.6 million in 2021 as compared to $0.6 million in 2020, remaining largely unchanged.

Costs of Revenue and Gross Profit

There was no significant change in the Company's cost of revenue year over year. Gross profit was approximately unchanged as compared to the same period in 2020.

Research and Development Expenses

Research and development expenses increased $1.1 million, or 22%, as compared to the same period in 2020. This increase was primarily attributable to an overall increase in R&D activity to support the Company's strategic objective of developing new technologies and related products.

General and Administrative Expenses

General and administrative expenses increased $0.5 million, or 15%, as compared to the same period in 2020. This increase is largely due to an increase in insurance costs and fees for external consulting when compared to the prior year.

Sales and Marketing Expenses

Sales and marketing expenses increased $0.6 million, or 89%, as compared to the same period in 2020. This increase was primarily attributable to an overall increase in marketing activities and personnel to generate interest in and exposure to the Company's potential new product lines.

Other Income (Expense), Net

Other income increased $0.4 million, or 25%, as compared to the same period in 2020. This increase was primarily due to offering costs in the amount of $1.2 million in the prior year, the forgiveness of PPP loans of $0.9 million, and the gain on the sale of assets of $0.1 million, offset by a decrease in the change in the fair value of the derivative liabilities in the amount of $1.4, a $0.2 million reduction in interest income, and a $0.2 million reduction in accrued sterilization in the prior year.

Liquidity and Capital Resources

The consolidated financial statements have been prepared assuming the Company will continue to operate as a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business, and does not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result from uncertainty related to its ability to continue as a going concern within one year from the date of issuance of these consolidated financial statements.

For the years ended December 31, 2021 and 2020, the Company incurred a net loss of $8.8 million and $7.0 million, respectively, and used cash in operations of $10.1 million and $9.1 million, respectively. The Company had an accumulated deficit of $249.9 million and $241.1 million as of December 31, 2021 and 2020, respectively. The Company's operations have been principally financed from proceeds from the issuance of preferred and common stock and, to a lesser extent, cash generated from product sales. It is anticipated that the Company will continue to generate operating losses and use cash in operations. The Company's continuation as a going concern is dependent upon its ability to increase sales, and/or raise additional funds through the capital markets. Whether and when the Company can attain profitability and positive cash flows from operations or obtain additional financing is uncertain.

The Company is actively generating additional scientific and clinical data to have it published in leading industry publications. The unique features of our silicon nitride material are not well known, and we believe the publication of such data would help sales efforts as the Company approaches new prospects. The Company is also making additional changes to the sales strategy, including a focus on revenue growth by expanding the use of silicon nitride in other areas outside of spinal fusion applications. For

instance, results from an independent study demonstrated the potential anti-viral properties of our silicon nitride. We believe that we may be able to apply our silicon nitride powder to personal protection products, such as face masks, gowns and gloves, resulting in inactivation of viruses that come into contact with the items.

The Company has common stock that is publicly traded and has been able to successfully raise capital when needed since the date of the Company's initial public offering in February 2014. On February 6, 2020, the Company closed on a rights offering to its stockholders of units, consisting of convertible preferred stock and warrants, for gross proceeds of $9.4 million, which excludes underwriting discounts and commissions and offering expenses payable by the Company. Additionally, during the period of June 2020 through August 2020, the Company closed four registered direct offerings of shares of its common stock, priced at-the-market under Nasdaq rules, resulting in the issuance of a total of 1,101,500 shares of its common stock for gross proceeds of approximately $20.9 million, which excludes underwriting discounts and commissions and offering expenses payable by the Company.

During the year ended December 31, 2019, the Company entered into an ATM equity distribution agreement in which the Company may sell, from time to time, shares of common stock having an aggregate offering price of up to $2.5 million. During the year ending December 31, 2020, the Company sold 3,544 shares of common stock, raising approximately $0.8 million before considering issuance costs. As a result of the sales during the first half of 2020 there are no longer any funds available to the Company under the ATM.

On February 25, 2021, the Company entered into an Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim, pursuant to which we may sell from time to time, shares of our common stock, $0.01 par value per share, having an aggregate offering price of up to $15.0 million through Maxim, as agent. No shares have been sold under the 2021 Distribution Agreement as of December 31, 2021.

On October 1, 2018, the Company sold the retail spine implant business to CTL Medical. The sale included a $6 million noninterest bearing note receivable payable over a 36-month term. CTL Medical has paid this note in full, and the Company does not expect any future cashflows associated with the note.

Risks Related to COVID-19 Pandemic

The COVID-19 pandemic affected the United States and global economies and affected the Company's operations and those of third parties on which the Company relies. In response to the spread of COVID-19 and to ensure safety of employees and continuity of business operations, we temporarily restricted access to the facility, with our administrative employees continuing their work remotely and limited the number of staff in our manufacturing facility. We implemented protective measures such as wearing of face masks, maintaining social distancing, and additional cleaning. Beginning in 2021, we have offered vaccination incentives. We have now opened up our facilities. The extent to which fear of exposure to or actual effects of COVID-19, new variants, disease outbreak, epidemic or a similar widespread health concern impacts our business will depend on future developments, which are highly uncertain and cannot be predicted with confidence.

Cash Flows

The following table summarizes, for the periods indicated, cash flows from operating, investing and financing activities (in thousands):

	Year Ended December 31,	
	2021	**2020**
Net cash used in operating activities	$ (10,132)	$ (9,112)
Net cash provided by (used in) investing activities	(1,651)	1,751
Net cash provided by financing activities	705	30,925
Net cash provided (used)	$ (11,078)	$ 23,564

Net Cash Used in Operating Activities

Net cash used in operating activities was $10.1 million in 2021, compared to $9.1 million used in 2020, an increase of $1.0 million. The increase in the net loss for operations, and related non-cash add backs to the net loss, was $1.1 million from 2021 when compared to 2020. The increase in cash used for operating activities during 2021 was primarily due to the $1.1 million mentioned above plus changes in the movement of working capital items during 2021 as compared to the same period in 2020 as follows: a $0.3 million increase in cash used for inventory, a $0.1 million increase in cash payments in account and other receivables, a $0.1 million increase in cash used in prepaids, offset by a $0.6 million decrease in cash used in accounts payable and accrued liabilities.

Net Cash Provided by (Used in) Investing Activities

Net cash used in investing activities was $1.7 million during 2021, compared to $1.8 million provided by investing activities during the same period in 2020, a decrease of $3.5 million. The decrease in cash provided in investing activities during 2021 was primarily due to a decrease in cash of $3.4 million for the purchase of property and equipment, and $0.2 million from the proceeds from notes receivable, offset by the increase of $0.1 million for the proceeds from the sale of property and equipment.

Net Cash Provided by Financing Activities

Net cash provided by financing activities was $0.7 million during 2021, compared to $30.9 million provided by financing activities during the same period in 2020, a decrease of $30.2 million. This decrease was primarily attributable to proceeds in the prior year from warrant derivative liabilities of $6.3 million, proceeds from issuance of common stock in the amount of $20.0 million, proceeds from issuance of preferred stock in the amount of $3.1 million and a decrease in the proceeds from warrants exercised for cash of $0.9 million, all offset by a $0.1 million increase from the issuance of debt.

Indebtedness

2020 PPP Loan

On April 28, 2020, the Company received funding under a Paycheck Protection Program ("PPP") loan (the "PPP Loan") from First State Community Bank (the "Lender"). The principal amount of the PPP Loan was $0.4 million. The PPP was established under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and is administered by the U.S. Small Business Administration (the "SBA"). Loans made under the PPP may be partially or fully forgiven if the recipient complies with the provisions of the CARES Act, including the use of PPP Loan proceeds for payroll costs, rent, utilities and other expenses, provided that such amounts are incurred during a 24-week period that commenced on April 28, 2020 and at least 60% of any forgiven amount has been used for covered payroll costs as defined by the CARES Act. On January 5, 2021, the Lender provided notice to the Company that the principal amount and accrued interest had been forgiven. The Company removed the PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.4 million.

2021 PPP Loan

On March 15, 2021, the Company received funding under the SBA Second Draw Program under the Paycheck Protection Program ("2021 PPP") (the "2021 PPP Loan") from the Lender. The principal amount of the 2021 PPP Loan is $0.5 million. The Company received notice on November 24, 2021, that the principal amount and accrued interest had been forgiven. The Company removed the 2021 PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.5 million.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements, as defined in Item 303(a)(4) of Regulation S-K.

Related-Party Transactions

We have not entered into any transactions since January 1, 2021 to which we have been a party, in which the amount involved in the transaction exceeded the lesser of $120,000 or one percent of the average of our total assets at year-end for the last two completed fiscal years, and in which any of our directors, executive officers or, to our knowledge, beneficial owners of more than 5% of our common stock, on an as converted basis, or any member of the immediate family of any of the foregoing persons had or will have a direct or indirect material interest, other than equity and other compensation, termination, change in control and other arrangements.

Indemnification Agreements: We have entered into indemnification agreements with each of our executive officers and directors that require us to indemnify such persons against any and all expenses, including judgments, fines or penalties, attorney's fees, witness fees or other professional fees and related disbursements and other out-of-pocket costs incurred, in connection with any action, suit, arbitration, alternative dispute resolution mechanism, investigation, inquiry or administrative hearing, whether threatened, pending or completed, to which any such person may be made a party by reason of the fact that such person is or was a director, officer, employee or agent of our company, provided that such director or officer acted in good faith and in a manner that the director or officer reasonably believed to be in, or not opposed to, our best interests. The indemnification agreements also set forth procedures that will apply in the event of a claim for indemnification thereunder. We believe that these provisions and agreements are necessary to attract and retain qualified persons as directors and officers.

Seasonality and Backlog

Our business is generally not seasonal in nature. We derive our product revenue primarily from the sale of spinal fusion products, used in the treatment of spine disorders, to CTL Medical, with whom we have an exclusive sales agreement in place with a remaining term of 7-years. CTL Medical's sales generally consist of products that are in stock with them or maintained at hospitals or with their sales distributors. Accordingly, we do not have a backlog of sales orders.

Critical Accounting Policies and Estimates

A summary of our significant accounting policies and estimates is discussed in Management's Discussion and Analysis of Financial Condition and Results of Operations and in Note 1 to our consolidated financial statements for the year ended December 31, 2021. The preparation of the consolidated financial statements in accordance with U.S. generally accepted accounting principles requires us to make judgments, estimates and assumptions regarding uncertainties that affect the reported amounts of assets and liabilities. Significant areas of uncertainty that require judgments, estimates and assumptions include the accounting for income taxes and other contingencies as well as valuation of derivative liabilities, asset impairment and collectability of accounts receivable. We use historical and other information that we consider to be relevant to make these judgments and estimates. However, actual results may differ from those estimates and assumptions that are used to prepare our consolidated financial statements.

New Accounting Pronouncement, Not Yet Adopted

The Company has reviewed all other recently issued, but not yet adopted, accounting standards, in order to determine their effects, if any, on its results of operations, financial position or cash flows. Based on that review, the Company believes that no other pronouncements will have a significant effect on its financial statements upon adoption.

Revenue Recognition

The Company derives its product revenue primarily from the sale of spinal fusion products, used in the treatment of spine disorders to CTL Medical, with whom the Company has a 10-year exclusive sales agreement in place,7 years of which remain. The Company is currently pursuing other sales opportunities for silicon nitride outside the spinal fusion application. The sale of the Company's products has a single performance obligation and revenue is recognized at the time the product is shipped to the customer. In general, the Company's customers do not have any rights of return or exchange.

Revenue is recognized when control of the goods or services promised under the contract is transferred to the customer either at a point in time (e.g., upon delivery) or over time (e.g., as performed under the contract). The Company accounts for a contract when it has approval and commitment from both parties, the rights and payment terms of the parties are identified, the contract has commercial substance and collectability of consideration is probable. Contracts are reviewed to determine whether there is one or multiple performance obligations. A performance obligation is a promise to transfer a distinct good or service to a customer and represents the unit of accounting for revenue recognition. For contracts with multiple performance obligations, the expected consideration, or the transaction price, is allocated to each performance obligation identified in the contract based on the relative standalone selling price of each performance obligation. Revenue is then recognized for the transaction price allocated to the performance obligation when control of the promised goods or services underlying the performance obligation is transferred. Contract consideration is not adjusted for the effects of a significant financing component when, at contract inception, the period between when control transfers and when the customer will pay for that good or service is one year or less. Contact modifications that provide for additional distinct goods or services at the standalone selling price are treated as separate contracts. The transaction price for our contracts reflects our estimate of returns, rebates and discounts, which historically have not been significant. Amounts billed to customers for shipping and handling are included in the transaction price and generally are not treated as separate performance obligations as these costs fulfill a promise to transfer the product to the customer. The Company does not employee salespeople to actively seek additional customers; there are no incremental costs for obtaining customers that need to be capitalized.

Account and Other Receivables and Allowance for Doubtful Accounts

Account and other receivables are carried at invoiced amount less an allowance for doubtful accounts. On a regular basis, the Company evaluates account and other receivables and estimates an allowance for doubtful accounts, as needed, based on various factors such as customers' current credit conditions, length of time past due, and the general economy as a whole. Receivables are written off against the allowance when they are deemed uncollectible.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost for manufactured inventory determined under the standard costs, which approximate actual costs, determined on the first-in first-out ("FIFO") method. Manufactured inventory consists of raw material, direct labor and manufacturing overhead cost components. The Company reviews the carrying value of inventory on a periodic basis for excess or obsolete items, and records any write-down as a cost of revenue, as necessary.

Long Lived Intangible Assets

The Company evaluates the carrying value of definite-lived intangibles when events or changes in circumstances indicate that the carrying value may not be recoverable. Factors the Company considers important which could trigger an impairment review include, but are not limited to, significant under-performance relative to historical or projected future operating results, significant changes in the manner of its use of acquired assets or its overall business strategy, and significant industry or economic trends. The

Company amortizes definite-lived intangible assets on a straight-line basis over their useful lives. The Company recorded no impairment loss for definite-lived intangible assets during the year ended December 31, 2021. As explained above, the Company sold most intangible assets that had a carrying value, retaining the carrying value of only one trademark asset.

Property and Equipment

Property and equipment, including leasehold improvements, are stated at cost, less accumulated depreciation and amortization. Property and equipment are depreciated using the straight-line method over the estimated useful lives of the assets, which range from three to five years. Leasehold improvements are amortized over the shorter of their estimated useful lives or the related lease term, generally five years.

The Company reviews the carrying value of the Company's property and equipment that are held and used in the Company's operations for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of these assets is determined based upon expected undiscounted future net cash flows from the operations to which the assets relate, utilizing management's best estimate, assumptions, and projections at the time. If the carrying value is determined to be unrecoverable from future operating cash flows, the asset is deemed impaired and an impairment charge would be recognized to the extent the carrying value exceeded the estimated fair value of the asset. The Company estimates the fair value of assets based on the estimated future discounted cash flows of the asset.

As of December 31, 2021, $2.7 million of property and equipment is related to the purchase of equipment for SINTX Armor. As explained in Note 1, on July 20, 2021, the Company acquired the equipment and obtained certain intellectual know how with which it intends to develop, manufacture and commercialize protective armor plates from boron carbide and a composite material of silicon carbide and boron carbide for military, law enforcement and civilian uses. As of December 31, 2021, the assets have not yet been placed in service, nor has the Company recognized any depreciation expense associated with these assets.

Income Taxes

The Company recognizes deferred tax assets and liabilities for the future tax consequences attributable to the differences between the financial statement carrying value of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the fiscal year in which those temporary differences are expected to be recovered or settled. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

The Company operates in various tax jurisdictions and is subject to audit by various tax authorities. The Company provides for tax contingencies whenever it is deemed probable that a tax asset has been impaired, or a tax liability has been incurred for events such as tax claims or changes in tax laws. Tax contingencies are based upon their technical merits relative tax law and the specific facts and circumstances as of each reporting period. Changes in facts and circumstances could result in material changes to the amounts recorded for such tax contingencies.

The Company recognizes uncertain income tax positions taken on income tax returns at the largest amount that is more-likely than-not to be sustained upon audit by the relevant taxing authority. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained.

The Company's policy for recording interest and penalties associated with uncertain tax positions is to record such items as a component of our income tax provision. For the years ended December 31, 2021 and 2020, the Company did not record any material interest income, interest expense or penalties related to uncertain tax positions or the settlement of audits for prior periods.

Stock-Based Compensation

The Company measures stock-based compensation expense related to employee stock-based awards based on the estimated fair value of the awards as determined on the date of grant and is recognized as expense over the remaining requisite service period. The Company utilizes the Black-Scholes-Merton option pricing model to estimate the fair value of employee stock options. The Black-Scholes-Merton model requires the input of highly subjective and complex assumptions, including the estimated fair value of the Company's common stock on the date of grant, the expected term of the stock option, and the expected volatility of the Company's common stock over the period equal to the expected term of the grant. The Company estimates forfeitures at the date of grant and revises the estimates, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company accounts for stock options to purchase shares of stock that are issued to non-employees based on the estimated fair value of such instruments using the Black-Scholes-Merton option pricing model.

Derivative Liabilities

Derivative liabilities include the fair value of instruments such as common stock warrants, preferred stock warrants and convertible features of notes, that are initially recorded at fair value and are required to be re-measured to fair value at each reporting period. The change in fair value of the instruments is recognized as a component of other income (expense) in the Company's consolidated statements of operations until the instruments settle, expire or are no longer classified as derivative liabilities. The Company estimates the fair value of these instruments using the Black-Scholes-Merton or Monte-Carlo valuation models depending on the complexity of the underlying instrument. The significant assumptions used in estimating the fair value include the exercise price, volatility of the stock underlying the instrument, risk-free interest rate, estimated fair value of the stock underlying the instrument and the estimated life of the instrument.

BUSINESS

Overview – SINTX Technologies

SINTX Technologies is a 26-year-old advanced ceramics company formed in December 1996, focused on providing solutions in a variety of biomedical, technical, and antipathogenic applications. We have grown from focusing primarily on the research, development and commercialization of medical devices manufactured with silicon nitride to becoming an advanced ceramics company engaged in diverse fields, including biomedical, technical and antipathogenic applications. This diversification enables us to focus on our core competencies which are the manufacturing, research, and development of products comprised from advanced ceramic materials for external partners. We seek to connect with new customers, partners and manufacturers to help them realize the goal of leveraging our expertise in advanced ceramics to create new, innovative products across these sectors.

SINTX Core Business

Biomedical Applications: Since our inception, we have been focused on medical grade silicon nitride. SINTX silicon nitride products are biocompatible, bioactive, antipathogenic, and have shown superb bone affinity. Spinal implants made from SINTX silicon nitride have been successfully implanted in humans since 2008 in the US, Europe, Brazil, and Taiwan. This established use, along with its inherent resistance to bacterial adhesion and bone affinity – mean that it may also be suitable in other fusion device applications such as arthroplasty implants, foot wedges, and dental implants. Bacterial infection of any biomaterial implants is always a concern. SINTX silicon nitride is inherently resistant to bacterial colonization and biofilm formation, making it antibacterial. SINTX silicon nitride products can be polished to a smooth and wear-resistant

surface for articulating applications, such as bearings for hip and knee replacements.

We believe that silicon nitride has a superb combination of properties that make it suited for long-term human implantation. Other biomaterials are based on bone grafts, metal alloys, and polymers- all of which have well-known practical limitations and disadvantages. In contrast, silicon nitride has a legacy of success in the most demanding and extreme industrial environments. As a human implant material, silicon nitride offers bone ingrowth, resistance to bacterial and viral infection, ease of diagnostic imaging, resistance to corrosion, and superior strength and fracture resistance, among other advantages, all of which claims are validated in our large and growing inventory of peer-reviewed, published literature reports. We believe that our versatile silicon nitride manufacturing expertise positions us favorably to introduce new and innovative devices in the medical and non-medical fields.

In June 2022, we acquired Technology Assessment and Transfer, Inc. (TA&T), a nearly 40-year-old business with a mission to transition advanced materials and process technologies from a laboratory environment to commercial products and services. TA&T has supplied ceramics for use in several biomedical applications. These products were made via 3D printing and include components for surgical instruments as well as conceptual and prototype dental implants.

Technical Applications: It is our belief that our silicon nitride has the best combination of mechanical, thermal, and electrical properties of any technical ceramic material. It is a high-performance technical ceramic with high strength, toughness, and hardness, and is extremely resistant to thermal shock and impact. It is also an electrically insulating ceramic material. Typically, it is used in applications where high load-bearing capacity, thermal stability, and wear resistance are required. We have obtained AS9100D certification and ITAR registration to facilitate entry into the aerospace portion of this market.

We recently entered the ceramic armor market through the purchase of assets from B4C, LLC and a technology partnership with Precision Ceramics USA. We intend to develop and manufacture high-performance ceramics for personnel, aircraft, and vehicle armor including a 100% Boron Carbide material for ultimate lightweight performance in ballistic applications, and a composite material made of Boron Carbide and Silicon Carbide for exceptional multi-hit performance against ballistic threats. We have signed a 10-year lease at a building near its headquarters in Salt Lake City, UT to house development and manufacturing activities for SINTX Armor.

TA&T's primary area of expertise is material processing and fabrication know how for a broad spectrum of monolithic ceramic, ceramic composite, and coating materials. Primary technologies include additive manufacturing (3D Printing) of ceramics and metals, low cost fabrication of fiber reinforced ceramic matrix composites (CMCs) and refractory chemical vapor deposited (CVD) coatings, transparent ceramics for ballistic armor and optical applications, and magnetron sputtered (PVD) coatings for lubrication, wear resistance and environmental barrier coatings for CMCs. TA&T also provides a host of services that include 3D printing, PVD-CVD coatings, material processing-CMCs, CIP, PS, HP, HIP, and material characterization for powders and finished parts-TGA/DSC, PSD. SA, Dilatometry, UV-VIS and FTIR transmission, haze and clarity.

Antipathogenic Applications: Today, there is a global need to improve protection against pathogens in everyday life. SINTX believes that by incorporating its unique composition of silicon nitride antipathogenic powder into products such as face masks, filters, and wound care devices, it is possible to manufacture surfaces that inactivate pathogens, thereby limiting the spread of infection and disease. The discovery in 2020 that SINTX silicon nitride inactivates SARS-CoV-2, the virus which causes the disease COVID-19, has opened new markets and applications for our material and we have focused many of our resources on these opportunities.

We presently manufacture advanced ceramic powders and components in our manufacturing facilities based in Salt Lake City, Utah.

Our Products

Silicon Nitride

To control the quality, cost and availability of our silicon nitride products and product candidates, we operate our own silicon nitride manufacturing facility. Our 30,000 square foot corporate facility includes an 18,000 square foot FDA registered and ISO 13485:2016 certified medical device manufacturing space. It is equipped with state-of-the-art powder processing, spray drying, pressing and computerized machining equipment, sintering furnaces, and other testing equipment that enables us to control the entire manufacturing process for our silicon nitride products and product candidates. All operations with the exception of raw material production are performed in-house. We purchase raw materials, consisting of silicon nitride ceramic powder and dopant chemical compounds, from several vendors which are ISO registered and approved by us. These raw materials are characterized and tested in accordance with our specifications and then blended to formulate our silicon nitride. We believe that there are multiple vendors that can supply us these raw materials and we continually monitor the quality and pricing offered by our vendors to ensure high quality and cost-effective supply of these materials.

The chemical composition of our in-house formulation of silicon nitride and our processing and manufacturing experience allows us to produce silicon nitride in multiple distinct forms. This capability provides us with the ability to utilize our silicon nitride in a variety of ways depending on the intended application, which, together with our silicon nitride's key characteristics, distinguishes us from other manufacturers of silicon nitride products.

We currently produce silicon nitride for use in our commercial products and product candidates in the following forms:

- *Solid Silicon Nitride.* This form of silicon nitride is a fully dense, load-bearing solid which can be used for devices that require high strength, toughness, fracture resistance and low wear. Applications include medical devices – such as interbody spinal fusion implants – and non-medical such as cutting tools, welding rods, and aerospace components.

- *Porous Silicon Nitride.* While this form of silicon nitride has a chemical composition that is identical to that of our monolithic solid silicon nitride, this formulation has a porous structure, which is engineered to mimic cancellous bone, the spongy bone tissue that typically makes up the interior of human bones. Our porous silicon nitride has interconnected pores ranging in size between about 90 and 600 microns, which is similar to that of cancellous bone. This form of silicon nitride can be used for the promotion of bone in-growth and attachment. We believe our porous silicon nitride can act as a substitute for the orthobiologics currently used to fill interbody devices in an effort to stimulate fusion, as a bone void filler, and as a porous scaffold for medical devices.

- *Silicon Nitride Powder.* We can produce silicon nitride powder that is osteogenic and antipathogenic. This powder can then be utilized to produce composites or coatings.

- *Composite of Silicon Nitride and PEEK.* We have demonstrated in the laboratory that it is possible to compound our silicon nitride powder and the polymer PEEK and that the ensuing composite material maintains the bioactive properties of silicon nitride. We have engaged academic and commercial partners to assist us in developing this technology and have received an NIH grant to assist in advancing this work. This composite material would allow the straightforward machinability of a complex device that would be more challenging to manufacture from silicon nitride alone.

- *Silicon Nitride Coating.* With a similar chemical composition as our other forms of silicon nitride, this form of silicon nitride can be applied as an adherent coating to metallic substrates, including cobalt-chromium, titanium and steel alloys, polymers, and ceramics. We believe applying an extremely thin layer of silicon nitride as a coating may provide a highly wear-resistant articulation surface, such as on femoral heads, which may reduce problems associated with metal or polymer wear debris. We also believe that the silicon nitride coating can be applied to devices that require firm fixation and functional connections between the device or implant and the surrounding tissue, such as hip stems and screws. The use of silicon nitride coating may also create an antibacterial, antiviral, and antifungal barrier between the device and the adjacent bone or tissue. We are currently evaluating several different coating technologies.

We believe we are the only FDA-registered and ISO 13485:2016 certified silicon nitride medical device manufacturing facility in the world, and the only provider of structural ceramics-based medical devices used for spinal fusion applications. Silicon nitride is a chemical compound comprised of the element's silicon and nitrogen, with the chemical formula Si_3N_4. Silicon nitride, an advanced ceramic, is lightweight, resistant to fracture and strong, and is used in many demanding mechanical, thermal and wear applications, such as in space shuttle bearings, jet engine components, and body armor.

We believe our silicon nitride is ideal as an implant material and is superior to other biomaterials currently used in the spine implant market such as PEEK, allograft and autograft bone, metal and traditional oxide ceramics, none of which possess all of the favorable characteristics of silicon nitride:

- *Promotes Bone Growth.* Our silicon nitride is osteointegrative through its inherent surface topography and surface chemistry. The surface topography provides scaffolding for new bone growth. As a hydrophilic material, silicon nitride attracts protein cells and nutrients that stimulate osteoprogenitor cells to differentiate into osteoblasts, which are needed for optimal bone growth environments. Our silicon nitride has an inherent surface chemistry that favors bone formation and healing, much more so than PEEK and metals. These properties were highlighted in an *in vivo* study, where we measured the force required to separate devices from the spine after being implanted for three months, which indicates the quality of osteointegration. In the absence of bacteria, the force required to separate our silicon nitride from its surrounding bone was approximately three times that of PEEK, and nearly two times that of titanium. In the presence of bacteria, the force required to separate our silicon nitride from its surrounding bone was over five times that of titanium, while there was effectively no separation force required for PEEK, indicating essentially no osteointegration in a septic environment.

- *Antibacterial.* We have demonstrated in *in vitro* and *in vivo* studies that silicon nitride has inherent surface antibacterial properties, which reduce the risk of bacterial infection and biofilm in and around a silicon nitride device. PEEK, traditional ceramics, metals and bone do not have this bacterial resistance. These properties were highlighted in an *in vitro* study (Acta Biomater. 2012 Dec;8(12):4447-54. Doi: 10.1016/j.actbio.2012.07.038. Epub 2012 Jul 31.), where live bacteria counts were between 8 and 30 times lower on our silicon nitride than PEEK and up to 8 times lower on our silicon nitride than titanium. In addition to improving patient outcomes, we believe the antibacterial properties of our silicon nitride should make it an attractive biomaterial to hospitals and surgeons who are not reimbursed by third-party payers for the treatment of acute, implant-related infections. Additionally, silicon nitride is synthetic and, therefore, there is a lower risk of disease transmission through cross-contamination or of an adverse auto-immune response, sometimes associated with the use of allograft bone.

- *Antiviral:* Solid-surface inactivation of microbial pathogens has ancient roots; the Smith Papyrus (2600~2200 B.C.) described the use of copper surfaces to sterilize chest wounds and drinking water. Today, brass and bronze on doorknobs help prevent microbial spread in hospitals, and metal particles and surface coatings of selected metals are used in hygiene-sensitive environments, both as inactivators and adjuvants in inducing cellular immunity. Cellular toxicity limits these approaches because while the reactive oxygen radicals generated at metal surfaces efficiently kill bacteria and viruses, they also damage cells by oxidizing their proteins and lipids. Recent data have shown that silicon nitride surfaces are effective against several types of viruses. With surface-contact transmission of viral pathogens, particularly influenza, and the increasing use of consumer touchscreens in various retail industries, we believe that our material has value to OEM partners focused on consumer glass-based surface coatings and treatments. We have filed a U.S. patent application on this effect.

- *Antifungal:* We have conducted preliminary studies which suggest that our silicon nitride may be effective against fungal microbes. Plant-based viruses, bacteria, and fungi affect some 15% of the world's edible crops, or about 1 billion metric tons of edible produce annually, with an economic impact in the US and Canada alone estimated to be between $1.5 to $5 Billion per year. The mycotoxins produced by these plant fungi have an overall negative impact on human health and longevity. The inorganic nature of silicon nitride may prove to be more beneficial than the use of petrochemical or organometallic fungicides which are known to have residual effects in soil, on plants, and in fruit.

- *Imaging Compatible.* Our silicon nitride interbody spinal fusion devices are semi-radiolucent, clearly visible in X-rays, and produce no distortion under MRI and no scattering under CT. These characteristics enable an exact view of the device for precise intra-operative placement and post-operative bone fusion assessment in spinal fusion procedures. These qualities provide surgeons with greater certainty of outcomes with our silicon nitride devices than with other biomaterials, such as PEEK and metals.

- *Hard, Strong and Resistant to Fracture.* Our silicon nitride is hard, strong and possesses superior resistance to fracture over traditional ceramics and greater strength than polymers currently on the market. For example, our silicon nitride's flexural strength is more than five times that of PEEK and our silicon nitride's compressive strength is over twenty times that of PEEK. Unlike PEEK interbody spinal fusion devices, we believe our silicon nitride interbody spinal fusion devices can withstand the forces exerted during implantation and daily activities over the long term.

- *Resistant to Wear.* We believe our silicon nitride joint implant product candidates could have higher resistance to wear than metal-on-cross-linked polyethylene and traditional oxide ceramic-on-cross-linked polyethylene joint implants, the two most commonly used total hip replacement implants. Wear debris associated with metal implants increases the risk of metal sensitivity and metallosis. It is a primary reason for early failures of metal and polymer articulating joint components.

- *Non-Corrosive.* Our silicon nitride does not have the drawbacks associated with the corrosive nature of metal within the body, including metal sensitivity and metallosis, nor does it result in the release of metal ions into the body. As a result, we believe our silicon nitride products will have lower revision rates and fewer complications than comparable metal and traditional oxide ceramic products.

We and a number of independent third parties have conducted extensive biocompatibility, biomechanical, *in vivo* and *in vitro* testing on our silicon nitride composition to establish its safety and efficacy in support of regulatory clearance of our biomaterial, products and product candidates. We have also completed additional testing of our silicon nitride products and product candidates. The results of this testing have been published in over 130 peer reviewed publications and presentations that include basic science studies, small- and large-animal data, and human clinical studies. We believe that our product development strategy is consistent with the manner in which other biomaterials have been successfully introduced into the market and adopted as the standard of care. Listed below is an overview of some of the key testing completed on our silicon nitride biomaterial, products and product candidates to date, as well as other information about our silicon nitride and other biomaterials.

Other Advanced Ceramic Products

- *Ceramic Armor*

In 2021, we entered the ceramic armor market through the purchase of assets from B4C, LLC, Dayton, Ohio, and a technology partnership with Precision Ceramics USA. We operate our armor business through our wholly owned subsidiary SINTX Armor, Inc. We will develop and manufacture high-performance ceramics for personnel, aircraft, and

vehicle armor including a 100% boron carbide material for ultimate lightweight performance in ballistic applications, and a composite material made of boron carbide and silicon carbide for exceptional multi-hit performance against ballistic threats. The demand for ceramic armor has been propelled in the defense industries and is increasingly being used in the manufacturing of vests, backpacks, and vehicle panels for military applications. Since its introduction during the Vietnam War, ceramic armor has developed into a modern solution for defeating ballistic threats. Armor solutions utilizing ceramics are commonly used to protect vehicles, personnel, aircraft, and marine vessels due to their light weight and high hardness.

Boron carbide has additional uses including wear components – such as nozzles – and as a neutron absorber in nuclear reactors. We are pursuing opportunities in these market segments as well.

We have signed a 10-year lease at a building near its headquarters in Salt Lake City, Utah to house development and manufacturing activities for SINTX Armor. We relocated the B4C assets from Dayton into this facility and are making necessary upgrades to the facility infrastructure to operate the equipment.

- *Technology Assessment and Transfer (TA&T)*

TA&T's primary area of expertise is material processing and fabrication know how for a broad spectrum of monolithic ceramic, ceramic composite, and coating materials. Primary technologies include Additive Manufacturing (3D Printing) of ceramics and metals, low-cost fabrication of fiber reinforced ceramic matrix composites (CMCs) and refractory chemical vapor deposited (CVD) coatings, transparent ceramics for ballistic armor and optical applications, and magnetron sputtered (PVD) coatings for lubrication, wear resistance and environmental barrier coatings for CMCs.

Our Competitive Strengths

We believe we can use our silicon nitride technology platform to become a leading advanced ceramic company and have the following principal competitive strengths:

- *Sole Provider of Silicon Nitride Medical Devices.* We believe we are the only company that designs, develops, manufactures, and sells medical grade silicon nitride-based products. Due to its key characteristics, we believe our silicon nitride enables us to offer new and transformative products across multiple medical specialties. In addition, with the FDA clearance of our silicon nitride Valeo products, we are the only company to develop and manufacture a ceramic for use in FDA cleared spinal fusion medical devices in the United States.

- *In-House Manufacturing Capabilities.* We operate an 18,000 square foot manufacturing facility located at our corporate headquarters in Salt Lake City, Utah. This operation complies with the FDA's quality system regulation, or QSR, and is certified under the International Organization for Standardization's, or ISO, standard 13485:2016 for medical devices. This facility allows us to rapidly design and produce silicon nitride products while controlling the entire manufacturing process from raw material to finished components. We have signed a 10-year lease at a building near its headquarters in Salt Lake City, Utah to house development and manufacturing activities for SINTX Armor. TA&T operates out of two facilities in Millersville, MD totalling 15,840 square feet.

- *Extensive Network of Scientific Collaborators.* We have developed strong, multi-year, collaborative relationships with surgeons who have used our products. These surgeons have supported us in collecting clinical data on silicon nitride and on reporting the successful patient outcomes they have observed. We also have long standing relations with university laboratories in Japan and the US and participate in a European consortium on silicon nitride.

- *Highly Experienced Management and Technical Advisory Team.* Members of our management team have extensive experience in silicon nitride, ceramics, research and development, manufacturing and operations, product development, launching of new silicon nitride products into multiple industries. We also collaborate with a network of leading technical advisors in the design, development and use of our silicon nitride products and product candidates.

Our Strategy

Our goal is to become a leading advanced ceramics company. Key elements of our strategy to achieve this goal are the following:

- *Develop new products with anti-pathogenic properties, including inactivation of the SARS-CoV-2 virus, utilizing our silicon nitride technology.* We have conducted multiple tests over the last nine years which have identified and verified the antipathogenic properties of our silicon nitride powders, fully dense components, and silicon nitride-containing composites. Our research has explored the fundamental mechanisms responsible for these antipathogenic properties with the objective of developing commercial products and revenue from them. We have several partnerships exploring opportunities in face masks, filters, wound care, and coatings.

- *Develop additional commercial opportunities outside of the medical device market.* We have pursued the development of non-medical uses for our silicon nitride since selling the retail spine business in 2018. In 2019, we became ITAR-registered and obtained AS9100D certification of our quality management system. We have hired experienced business development employees to identify new markets and applications for our materials and develop commercial relationships. We made the first shipments of non-medical products in our history in 2020, and several of these have transitioned from prototype to regular production orders. The launch of SINTX Armor will generate revenue from new products. The acquisition of TA&T brings revenue from multiple markets that we have previously not participated in.

- *Develop new silicon nitride manufacturing technologies.* Our current manufacturing process has allowed us to successfully produce spinal implants for over 10 years. We have made advancements in our processes – including the purchase of new manufacturing equipment – which we have leveraged to develop new porous and textured implants. In 2021, SINTX purchased new equipment for its research and development team to develop new composite products of silicon nitride with rigid polymers and fabrics. We have received three NIH grants over the last fifteen months in order to develop 3D printed silicon nitride / polymer implantable medical devices.

- *Apply our silicon nitride technology platform to new medical opportunities.* We believe our biomaterial expertise, flexible manufacturing process, and strong intellectual property will allow us to transition currently available medical device products made of inferior biomaterials and manufacture them using silicon nitride and our technology platform to improve their characteristics. We are seeking partnerships to utilize our capabilities and manufacture products for medical OEM and private label partnerships. We see specific opportunities in markets such as foot and ankle, dental, maxillofacial, and arthroplasty.

Market Opportunity

Biomedical

We believe our silicon nitride biomaterial technology platform provides us with numerous competitive advantages in the biomaterials market. We manufacture interbody spinal fusion devices for CTL Amedica and have approximately 5 years remaining of a 10-year exclusive right to continue to manufacture them for CTL Amedica. We are developing products on our own behalf and for third party manufacturers – including CTL – for use as components in spine, total hip and knee joint replacements, as well as dental and maxillofacial applications. We believe we can also utilize our silicon nitride technology platform to develop future products in additional medical and non-medical markets.

We believe that the main drivers for growth within the orthopedic biomaterials market are the following:

- *Introduction of New Technologies.* Better performing and longer-lasting biomaterials, improved diagnostics, and advances in surgical procedures allow for surgical intervention earlier in the continuum of care and better outcomes for patients. We believe surgical options using better performing and longer-lasting biomaterials will gain acceptance among surgeons and younger patients and drive accelerated growth and increase the size of the spinal fusion and joint replacement markets.

- *Favorable and Changing Demographics.* With the growing number of elderly people, age-related ailments are expected to rise sharply, which we believe will increase the demand and need for biomaterials and devices with improved performance capabilities. Also, middle-aged and older patients increasingly expect to enjoy active lifestyles, and consequently demand effective treatments for painful spine and joint conditions, including better performing and longer-lasting interbody spinal fusion devices and joint replacements.

- *Market Expansion into New Geographic Areas.* We anticipate that demand for biomaterials and the associated medical devices will increase as the applications in which biomaterials are used are introduced to and become more widely accepted in underserved countries, such as Brazil and China. We also expect to introduce our products into established markets such as Australia and Japan.

Technical Ceramics

We believe there is significant potential for us to leverage our experience and operational discipline with silicon nitride spinal implants and enter non-medical markets for technical ceramics. The excellent mechanical, electrical, and thermal properties of our silicon nitride make it ideal for highly demanding applications in aerospace, welding, and other industrial applications. Our AS9100D certification and ITAR registration for the silicon nitride factory have allowed us to obtain orders for aerospace components – initially prototype orders which have now become regular production orders. Furthermore, there are few US-based manufacturers of silicon nitride which means there are limited options for those markets that require domestically produced material.

Since announcing our intent to enter the ceramic armor market in 2021, we have received many inquiries for aircraft, vehicle, and body armor. The war in Ukraine has further increased the worldwide need for ceramic armor. Our Salt Lake City armor facility will produce boron carbide and boron carbide/silicon carbide composite armor – materials which are some of the strongest, lightest weight options for ceramic armor. We are developing female-specific torso plates with a partner and expect this market to grow. We also have early-stage relationships with integrators for body armor and aircraft armor.

The acquisition of TA&T has brought well-established relationships with multiple US government agencies to produce new ceramic materials for leading-edge applications in aerospace and energy. TA&T has wide ranging manufacturing capabilities for ceramic coatings, 3D printed ceramics, transparent ceramic armor. These technologies have been used in over a hundred government research contracts throughout TA&T's history, and are still utilized in the development of novel ceramic-matrix composites. We believe that we can successfully build on TA&T's legacy, obtain new government contracts, and leverage its wide range of capabilities with materials and manufacturing technologies to increase revenue from non-government sources.

Personal Protective Equipment (PPE)

We believe that there is the opportunity for significant growth in the personal protective equipment or PPE market for products that are shown to have antiviral properties. The Company has demonstrated in controlled research studies the anti-viral properties of its silicon nitride which may be useful in the reduction of the spread of COVID-19 and other pathogens. The study results demonstrated that our unique grade of silicon nitride inactivates the SARS-CoV-2 virus within a minute after exposure and has the potential to decrease the risk of viral disease spread on surfaces. Studies have shown that coronavirus spreads between humans when an infected person coughs or sneezes. Also, the virus can remain active on a variety of commonly touched surfaces for hours to days. We believe that by incorporating our unique composition of silicon nitride into products such as face masks and personal protective equipment, it is possible to manufacture surfaces that inactivate viral particles, thereby limiting the spread of the disease. We envision incorporating our silicon nitride into high-contact surfaces such as medical equipment, screens, countertops, and doorknobs in locations where viral persistence is a concern, such as homes, casinos, and cruise ships. To that effect, we have successfully dispersed and embedded silicon nitride particles into nonwoven and woven fabric fibers.

The first area of focus for application of our unique silicon nitride powder is in face masks and face mask filters. Face masks used by healthcare workers today can capture virus particles, but the virus can remain viable in the mask, even as long 7 days after use. Inclusion of silicon nitride technology into the mask may enhance personal safety while reducing the risk of disease spread.

Intellectual Property

We rely on a combination of patents, trademarks, trade secrets, nondisclosure agreements, proprietary information ownership agreements and other intellectual property measures to protect our intellectual property rights. We believe that to have a competitive advantage, we must continue to develop and maintain the proprietary aspects of our technologies.

We have eleven issued U.S. patents, five foreign patents, eighteen pending U.S. non-provisional patent applications, no pending U.S. provisional patent applications, eighty-five pending foreign applications and six pending PCT patent applications. Our first issued patent expired in 2016, with the last of these patents expiring in 2039.

We have three U.S. patents directed to articulating implants using our high-strength, high toughness doped silicon nitride solid ceramic. These issued patents, which include US 7,666,229; US 9,051,639; and US 9,517,136 will expire in November 2023, September 2032, and March 2034, respectively.

We also have one U.S. patent related to our CSC technology that are directed to implants that have both a dense load-bearing, or cortical, component and a porous, or cancellous, component, together with a surface coating. The issued patent US 9,649,197 will expire in July 2035.

In addition, U.S. Patent No. 10,806,831 directed to antibacterial implants and U.S. Patent No. 11,191,787 directed to antipathogenic devices were recently issued which will expire in 2037 and 2039, respectively.

With respect to PCT patent application serial no. PCT/US2018/014781 directed to antibacterial biomedical implants, we entered the national stage in Europe, Australia, Brazil, Canada, China, Japan, Hong Kong, and South Korea as well as one divisional patent application filed in Europe and two divisional applications filed in Japan to seek potential patent protection for our proprietary technologies in those countries**.**

With respect to PCT patent application serial no. PCT/US2019/026789 directed to methods for improving the wear performance of ceramic-polyethylene or ceramic-ceramic articulation couples utilized in orthopaedic joint prostheses, we entered the national stage in Australia, Brazil, Canada, Europe, Japan, Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2019/048072 directed to antipathogenic devices and methods, we entered the national stage in Europe, Japan, Mexico, Australia, Brazil, Canada, South Korea, China, and India to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2020/037170 directed to methods of surface functionalization of zirconia-toughened alumina with silicon nitride, we entered the national stage in Europe, Australia, Brazil, Canada, China, India, Japan, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/014725 directed to antifungal composites and methods thereof, we entered the national stage in Europe, Brazil, Japan,

Australia, Canada, China, India, Mexico, and South Korea to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/027258 directed to antipathogenic face mask, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/027263 directed to systems and methods for rapid inactivation of SARS-CoV2 by silicon nitride, copper, and aluminum nitride, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/038364 directed to antipathogenic devices and methods thereof for antifungal applications, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no. PCT/US2021/028975 directed to methods for laser coating of silicon nitride on a metal substrate, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

With respect to PCT application serial no PCT/US2021/028641 directed to methods of silicon nitride laser cladding, we entered the national stage in Australia, Brazil, Canada, China, Europe, India, Japan, South Korea, and Mexico to seek patent protection for our proprietary technologies in those countries.

In relation to the sale of our spine implant business to CTL Medical under the Asset Purchase Agreement dated September 5, 2018, we assigned our entire right to forty-eight (48) U.S. patents, two (2) foreign patents and three (3) pending patent applications from our patent portfolio to CTL Medical under that transaction. In addition, three (3) U.S. patents (U.S. patent nos. 9,399,309; 9,517,136; and 9,649,197) directed to silicon nitride manufacturing processes were licensed to CTL Medical under an irrevocable, fully paid-up, worldwide license for a ten-year term with CTL Medical also having a Right of First Negotiation to acquire these patents if SINTX decides to later sell these IP assets to a third party.

Our remaining issued patents and pending applications are directed to additional aspects of our products and technologies including, among other things:

- designs for intervertebral fusion devices;
- designs for hip implants;
- designs for knee implants;
- implants with improved antibacterial characteristics;
- implants with improved wear performance and surface functionalization
- antipathogenic, antibacterial, antimicrobial, antifungal, and antiviral compositions, devices, and methods; and
- methods and systems for laser cladding, laser coating, and laser sintering of silicon nitride.

We also expect to rely on trade secrets, know-how, continuing technological innovation and in-licensing opportunities to develop and maintain our intellectual property position. However, trade secrets are difficult to protect. We seek to protect the trade secrets in our proprietary technology and processes, in part, by entering into confidentiality agreements with commercial partners, collaborators, employees, consultants, scientific advisors and other contractors and into invention assignment agreements with our employees and some of our commercial partners and consultants. These agreements are designed to protect our proprietary information and, in the case of the invention assignment agreements, to grant us ownership of the technologies that are developed.

Competition

The main alternatives to our silicon nitride biomaterial include: PEEK, which is predominantly manufactured by Invibio; BIOLOX® *delta*, which is a traditional oxide ceramic manufactured by CeramTec; allograft bone; metals; and coated metals.

We believe our main competitors in the medical device market, which utilize a variety of competitive biomaterials, include: Medtronic, Inc.; DePuy Synthes Companies, a group of Johnson & Johnson companies; Stryker Corporation; and Zimmer Biomet, Inc. Presently, these companies buy ceramic components on an OEM basis from manufacturers such as CeramTec, Kyocera and CoorsTek, Inc., among others. We anticipate that these and other orthopedic companies and OEMs will seek to introduce new biomaterials and products that compete with ours.

Our main competitors in the industrial market segment include CoorsTek, Kyocera, and Saint Gobain.

Our main competitors in the antipathogenic market segment include BactiGuard and MicroBan.

Competition within our industries is primarily based on technology, innovation, product quality, and product awareness and acceptance by customers. Our principal competitors have substantially greater financial, technical and marketing resources, as well as significantly greater manufacturing capabilities than we do, and they may succeed in developing products that render our products and product candidates non-competitive. Our ability to compete successfully will depend upon our ability to develop innovative products with advanced performance features.

Government Regulation of Medical Devices

Governmental authorities in the United States, at the federal, state and local levels, and other countries extensively regulate, among other things, the research, development, testing, manufacture, labeling, promotion, advertising, distribution, marketing and export and import of products such as those we are commercializing and developing. Failure to obtain approval or clearance to market our products and products under development and to meet the ongoing requirements of these regulatory authorities could prevent us from continuing to market or develop our products and product candidates.

United States

Pre-Marketing Regulation

In the United States, medical devices are regulated by the FDA. Unless an exemption applies, a new medical device will require either prior 510(k) clearance or approval of a

premarket approval application, or PMA, before it can be marketed in the United States. The information that must be submitted to the FDA in order to obtain clearance or approval to market a new medical device varies depending on how the medical device is classified by the FDA. Medical devices are classified into one of three classes on the basis of the controls deemed by the FDA to be necessary to reasonably ensure their safety and effectiveness. Class I devices, which are those that have the lowest level or risk associated with them, are subject to general controls, including labeling, premarket notification and adherence to the QSR. Class II devices are subject to general controls and special controls, including performance standards. Class III devices, which have the highest level of risk associated with them, are subject to most of the previously identified requirements as well as to premarket approval. Most Class I devices and some Class II devices are exempt from the 510(k) requirements, although manufacturers of these devices are still subject to registration, listing, labeling and QSR requirements.

A 510(k) premarket notification must demonstrate that the device in question is substantially equivalent to another legally marketed device, or predicate device, that did not require premarket approval. In evaluating the 510(k), the FDA will determine whether the device has the same intended use as the predicate device, and (a) has the same technological characteristics as the predicate device, or (b) has different technological characteristics, and (i) the data supporting the substantial equivalence contains information, including appropriate clinical or scientific data, if deemed necessary by the FDA, that demonstrates that the device is as safe and as effective as a legally marketed device, and (ii) does not raise different questions of safety and effectiveness than the predicate device. Most 510(k)s do not require clinical data for clearance, but the FDA may request such data. The FDA's goal is to review and act on each 510(k) within 90 days of submission, but it may take longer based on requests for additional information. In addition, requests for additional data, including clinical data, will increase the time necessary to review the notice. If the FDA does not agree that the new device is substantially equivalent to the predicate device, the new device will be classified in Class III, and the manufacturer must submit a PMA. Since July 2012, however, with the enactment of the Food and Drug Administration Safety and Innovation Act, or FDASIA, a de novo pathway is directly available for certain low to moderate risk devices that do not qualify for the 510(k) pathway due to lack of a predicate device. Modifications to a 510(k)-cleared medical device may require the submission of another 510(k) or a PMA if the changes could significantly affect the safety or effectiveness or constitute a major change in the intended use of the device.

Modifications to a 510(k)-cleared device frequently require the submission of a traditional 510(k), but modifications meeting certain conditions may be candidates for FDA review under a Special 510(k). If a device modification requires the submission of a 510(k), but the modification does not affect the intended use of the device or alter the fundamental scientific technology of the device, then summary information that results from the design control process associated with the cleared device can serve as the basis for clearing the application. A Special 510(k) allows a manufacturer to declare conformance to design controls without providing new data. When the modification involves a change in material, the nature of the "new" material will determine whether a traditional or Special 510(k) is necessary. For example, in its Device Advice on How to Prepare a Special 510(k), the FDA uses the example of a change in a material in a finger joint prosthesis from a known metal alloy to a ceramic that has not been used in a legally marketed predicate device as a type of change that should not be submitted as a Special 510(k). However, if the "new" material is a type that has been used in other legally marketed devices within the same classification for the same intended use, a Special 510(k) is appropriate. The FDA gives as an example a manufacturer of a hip implant who changes from one alloy to another that has been used in another legally marketed predicate. Special 510(k)s are typically processed within 30 days of receipt.

The PMA process is more complex, costly and time consuming than the 510(k) clearance procedure. A PMA must be supported by extensive data including, but not limited to, technical, preclinical, clinical, manufacturing, control and labeling information to demonstrate to the FDA's satisfaction the safety and effectiveness of the device for its intended use. After a PMA is submitted, the FDA has 45 days to determine whether it is sufficiently complete to permit a substantive review. If the PMA is complete, the FDA will file the PMA. The FDA is subject to performance goal review times for PMAs and may issue a decision letter as a first action on a PMA within 180 days of filing, but if it has questions, it will likely issue a first major deficiency letter within 150 days of filing. It may also refer the PMA to an FDA advisory panel for additional review and will conduct a preapproval inspection of the manufacturing facility to ensure compliance with the QSR, either of which could extend the 180-day response target. While the FDA's ability to meet its performance goals has generally improved during the past few years, it may not meet these goals in the future. A PMA can take several years to complete and there is no assurance that any submitted PMA will ever be approved. Even when approved, the FDA may limit the indication for which the medical device may be marketed or to whom it may be sold. In addition, the FDA may request additional information or request the performance of additional clinical trials before it will reconsider the approval of the PMA or as a condition of approval, in which case the trials must be completed after the PMA is approved. Changes to the device, including changes to its manufacturing process, may require the approval of a supplemental PMA.

If a medical device is determined to present a "significant risk," the manufacturer may not begin a clinical trial until it submits an investigational device exemption, or IDE, to the FDA and obtains approval of the IDE from the FDA. The IDE must be supported by appropriate data, such as animal and laboratory testing results and include a proposed clinical protocol. These clinical trials are also subject to the review, approval and oversight of an institutional review board, or IRB, which is an independent and multi-disciplinary committee of volunteers who review and approve research proposals, and the reporting of adverse events and experiences, at each institution at which the clinical trial will be performed. The clinical trials must be conducted in accordance with applicable regulations, including but not limited to the FDA's IDE regulations and current good clinical practices. A clinical trial may be suspended by the FDA, the IRB or the sponsor at any time for various reasons, including a belief that the risks to the study participants outweigh the benefits of participation in the trial. Even if a clinical trial is completed, the results may not demonstrate the safety and efficacy of a device or may be equivocal or otherwise not be sufficient to obtain approval.

Post-Marketing Regulation

After a device is placed on the market, numerous regulatory requirements apply. These include:

- compliance with the QSR, which require manufacturers to follow stringent design, testing, control, documentation, record maintenance, including maintenance of complaint and related investigation files, and other quality assurance controls during the manufacturing process;

- labeling regulations, which prohibit the promotion of products for uncleared or unapproved or "off-label" uses and impose other restrictions on labeling; and
- medical device reporting obligations, which require that manufacturers investigate and report to the FDA adverse events, including deaths, or serious injuries that may have been or were caused by a medical device and malfunctions in the device that would likely cause or contribute to a death or serious injury if it were to recur.

Failure to comply with applicable regulatory requirements can result in enforcement action by the FDA, which may include any of the following sanctions:

- warning letters;
- fines, injunctions, and civil penalties;
- recall or seizure of our products;
- operating restrictions, partial suspension or total shutdown of production;
- refusal to grant 510(k) clearance or PMA approvals of new products;
- withdrawal of 510(k) clearance or PMA approvals; and

- criminal prosecution.

To ensure compliance with regulatory requirements, medical device manufacturers are subject to market surveillance and periodic, pre-scheduled and unannounced inspections by the FDA, and these inspections may include the manufacturing facilities of our subcontractors.

International Regulation

International sales of medical devices are subject to foreign government regulations, which vary substantially from country to country. The time required to obtain approval by a foreign country may be longer or shorter than that required for FDA approval, and the requirements may differ. For example, the primary regulatory authority with respect to medical devices in Europe is that of the European Union. The European Union consists of 28 countries and has a total population of over 500 million people. The unification of these countries into a common market has resulted in the unification of laws, standards and procedures across these countries, which may expedite the introduction of medical devices like those we are offering and developing. Norway, Iceland, Lichtenstein and Switzerland are not members of the European Union but have transposed applicable European medical device laws into their national legislation. Thus, a device that is marketed in the European Union may also be recognized and accepted in those four non-member European countries as well.

The European Union has adopted numerous directives and standards regulating the design, manufacture, clinical trials, labeling and adverse event reporting for medical devices. Devices that comply with the requirements of relevant directives will be entitled to bear CE Conformity Marking, indicating that the device conforms to the essential requirements of the applicable directives and, accordingly, can be commercially distributed throughout the European Union. Actual implementation of these directives, however, may vary on a country-by-country basis. The CE Mark is a mandatory conformity mark on medical devices distributed and sold in the European Union and certifies that a medical device has met applicable requirements.

The method of assessing conformity varies, but normally involves a combination of self-assessment by the manufacturer and a third-party assessment by a "Notified Body." Notified Bodies are independent testing houses, laboratories, or product certifiers authorized by the European Union member states to perform the required conformity assessment tasks, such as quality system audits and device compliance testing. An assessment by a Notified Body based within the European Union is required in order for a manufacturer to distribute the product commercially throughout the European Union. Medium and higher risk devices require the intervention of a Notified Body which will be responsible for auditing the manufacturer's quality system. The Notified Body will also determine whether or not the product conforms to the requirements of the applicable directives. Devices that meet the applicable requirements of E.U. law and have undergone the appropriate conformity assessment routes will be granted CE "certification." The CE Mark is mandatory for medical devices sold not only within the countries of the European Union but more generally within most of Europe. As many of the European standards are converging with international standards, the CE Mark is often used on medical devices manufactured and sold outside of Europe (notably in Asia that exports many manufactured products to Europe). CE Marking gives companies easier access into not only the European market but also to Asian and Latin American markets, most of whom recognize the CE Mark on medical device as a mark of quality and adhering to international standards of consumer safety, health or environmental requirements.

Compliance with Healthcare Laws

We must comply with various U.S. federal and state laws, rules and regulations pertaining to healthcare fraud and abuse, including anti-kickback and false claims laws, rules, and regulations, as well as other healthcare laws in connection with the commercialization of our products. Fraud and abuse laws are interpreted broadly and enforced aggressively by various state and federal agencies, including the U.S. Department of Justice, the U.S. Office of Inspector General for the Department of Health and Human Services and various state agencies.

We have entered into agreements with certain surgeons for assistance with the design of our products, some of whom we anticipate may make referrals to us or order our products. A majority of these agreements contain provisions for the payments of royalties. In addition, some surgeons currently own shares of our stock. We have structured these transactions with the intention of complying with all applicable laws, including fraud and abuse, data privacy and security, and transparency laws. Despite this intention, there can be no assurance that a particular government agency or court would determine our practices to be in full compliance with such laws. We could be materially impacted if regulatory or enforcement agencies or courts interpret our financial arrangements with surgeons to be in violation of healthcare laws, including, without limitation, fraud and abuse, data privacy and security, or transparency laws.

The U.S. federal Anti-Kickback Statute prohibits persons, including a medical device manufacturer (or a party acting on its behalf), from knowingly or willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for a service or product or the purchasing, ordering, arranging for, or recommending the ordering of, any service or product for which payment may be made by Medicare, Medicaid or any other federal healthcare program. This statute has been interpreted to apply to arrangements between medical device manufacturers on one hand and healthcare providers on the other. The term "remuneration" is not defined in the federal Anti-Kickback Statute and has been broadly interpreted to include anything of value, such as cash payments, gifts or gift certificates, discounts, waiver of payments, credit arrangements, ownership interests, the furnishing of services, supplies or equipment, and the provision of anything at less than its fair market value. Courts have broadly interpreted the scope of the law, holding that it may be violated if merely "one purpose" of an arrangement is to induce referrals, irrespective of the existence of other legitimate purposes. The Anti-Kickback Statute prohibits many arrangements and practices that are lawful in businesses outside of the healthcare industry. Although there are a number of statutory exemptions and regulatory safe harbors protecting certain business arrangements from prosecution, the exemptions and safe harbors are drawn narrowly, and practices that involve remuneration intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exemption or safe harbor. Our practices may not in all cases meet all of the criteria for safe harbor protection from federal Anti-Kickback Statute liability. The reach of the Anti-Kickback Statute was broadened by the enacted Patient Protection and Affordable Care Act of 2010 and the Health Care and Education Affordability Reconciliation Act of 2010, collectively, the Affordable Care Act or ACA, which, among other things, amends the intent requirement of the federal Anti-Kickback Statute such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act (discussed below) or the civil monetary penalties statute, which imposes fines against any person who is determined to have presented or caused to be presented claims to a federal healthcare program that the person knows or should know is for an item or service that was not provided as claimed or is false or fraudulent. In addition to the federal Anti-Kickback Statute, many states have their own anti-kickback laws. Often, these laws closely follow the language of the federal law, although they do not always have the same scope, exceptions, safe harbors or sanctions. In some states, these anti-kickback laws apply not only to payments made by government healthcare programs but also to payments made by other third-party payors, including commercial insurance companies.

Sales, marketing, consulting, and advisory arrangements between medical device manufacturers and sales agents and physicians are subject to the Anti-Kickback Statute and other fraud and abuse laws. Government officials have focused recent enforcement efforts on, among other things, the sales and marketing activities of healthcare companies, including medical device manufacturers, and have brought cases against individuals or entities whose personnel allegedly offered unlawful inducements to potential or existing customers in an attempt to procure their business. We expect these activities to continue to be a focus of government enforcement efforts. Settlements of these cases by healthcare companies have involved significant fines and penalties and, in some instances, criminal plea agreements. We are also aware of governmental investigations of some of the largest orthopedic device companies reportedly focusing on consulting and service agreements between these companies and orthopedic surgeons. These developments are ongoing, and we cannot predict the effects they will have on our business.

The federal False Claims Act imposes liability on any person that, among other things, knowingly presents, or causes to be presented, a false or fraudulent claim for payment by

a federal healthcare program. The qui tam provisions of the False Claims Act allow a private individual to bring civil actions on behalf of the federal government alleging that the defendant has submitted a false claim, or has caused such a claim to be submitted, to the federal government, and to share in any monetary recovery. There are many potential bases for liability under the False Claims Act. Liability arises, primarily, when a person knowingly submits, or causes another to submit, a false claim for reimbursement to the federal government. The False Claims Act has been used to assert liability on the basis of inadequate care, kickbacks, and other improper referrals, and allegations as to misrepresentations with respect to the services rendered. Qui tam actions have increased significantly in recent years, causing greater numbers of healthcare companies, including medical device manufacturers, to defend false claim actions, pay damages and penalties, or be excluded from participation in Medicare, Medicaid or other federal or state healthcare programs as a result of investigations arising out of such actions. In addition, various states have enacted similar laws analogous to the False Claims Act. Many of these state laws apply where a claim is submitted to any third-party payor and not merely a federal healthcare program. We are unable to predict whether we would be subject to actions under the False Claims Act or a similar state law, or the impact of such actions. However, the cost of defending such claims, as well as any sanctions imposed, could adversely affect our financial performance. The Health Insurance Portability and Accountability Act of 1996, or HIPAA, also created several new federal crimes, including healthcare fraud and false statements relating to healthcare matters. The healthcare fraud statute prohibits knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private third-party payors. The false statements statute prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making any materially false, fictitious, or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items, or services.

In addition, we may be subject to, or our marketing or research activities may be limited by, data privacy and security regulation by both the federal government and the states in which we conduct our business. For example, HIPAA and its implementing regulations established uniform federal standards for certain "covered entities" (healthcare providers, health plans and healthcare clearinghouses) governing the conduct of certain electronic healthcare transactions and protecting the security and privacy of protected health information. The American Recovery and Reinvestment Act of 2009, commonly referred to as the economic stimulus package, included expansion of HIPAA's privacy and security standards called the Health Information Technology for Economic and Clinical Health Act, or HITECH, which became effective on February 17, 2010. Among other things, HITECH makes HIPAA's privacy and security standards directly applicable to "business associates"—independent contractors or agents of covered entities that create, receive, maintain, or transmit protected health information in connection with providing a service for or on behalf of a covered entity. HITECH also increased the civil and criminal penalties that may be imposed against covered entities, business associates and possibly other persons, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorney's fees and costs associated with pursuing federal civil actions. These laws also require the reporting of breaches of protected health information to affected individuals, regulators and in some cases, local or national media. HIPAA and HITECH impose strict limits on our physician collaborators' ability to use and disclose patient information on our behalf.

There are also an increasing number of state "sunshine" laws that require manufacturers to provide reports to state governments on pricing and marketing information. Several states have enacted legislation requiring medical device companies to, among other things, establish marketing compliance programs, file periodic reports with the state, make periodic public disclosures on sales and marketing activities, and to prohibit or limit certain other sales and marketing practices. In addition, a federal law known as the Physician Payments Sunshine Act, now requires medical device manufacturers to track and report to the federal government certain payments and other transfers of value made to physicians and teaching hospitals and ownership or investment interests held by physicians and their immediate family members. The first reporting period covered only payments or transfers of value made and ownership or investment interests held by physicians and their immediate family members from August 1, 2013 to December 31, 2013. The federal government disclosed the reported information on a publicly available website beginning in September 2014. For calendar year 2014, the Physician Payments Sunshine Act will require medical device manufacturers to report payments and transfers of values made and ownership or investment interests held by physicians and their immediate family members for the full calendar year. These laws may adversely affect our sales, marketing, and other activities by imposing administrative and compliance burdens on us. If we fail to track and report as required by these laws or to otherwise comply with these laws, we could be subject to the penalty provisions of the pertinent state and federal authorities.

Clinical research is heavily regulated by FDA regulations for the protection of human subjects (21 C.F.R. 50 and 56) and also the regulations of the U.S Department of Health and Human Services, or the Common Rule (45 C.F.R 46). Both FDA human subject regulations and the Common Rule impose restrictions on the involvement of human subjects in clinical research and require, among other things, the balancing of the risks and benefits of research, the documented informed consent of research participants, initial and ongoing review of research by an IRB. Similar regulations govern research conducted in foreign countries. Compliance with human subject protection regulations is costly and time consuming. Failure to comply could substantially and adversely impact our research program and the development of our products.

Because of the breadth of these laws and the narrowness of available statutory and regulatory exemptions, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If our operations are found to be in violation of any of the federal and state laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including criminal and significant civil monetary penalties, damages, fines, imprisonment, exclusion from participation in government healthcare programs, injunctions, recall or seizure of products, total or partial suspension of production, denial or withdrawal of pre-marketing product clearances and approvals, private "qui tam" actions brought by individual whistleblowers in the name of the government or refusal to allow us to enter into supply contracts, including government contracts, and the curtailment or restructuring of our operations. Public disclosure of privacy and data security violations could cause significant reputational harm. Any of these events could adversely affect our ability to operate our business and our results of operations. To the extent that any of our products are sold in a foreign country, we may be subject to similar foreign laws and regulations, which may include, for instance, applicable post-marketing requirements, including safety surveillance, anti-fraud and abuse laws, implementation of corporate compliance programs, as well as laws and regulations requiring transparency of pricing and marketing information and governing the privacy and security of health information, such as the E.U.'s Directive 95/46 on the Protection of Individuals with regard to the Processing of Personal Data, or the Data Directive, and the wide variety of national laws implementing the Data Directive.

Third-Party Reimbursement

Because we and our customers typically receive payment directly from hospitals and surgical centers, we do not anticipate relying directly on payment for any of our products from third-party payors, such as Medicare, Medicaid, private insurers, and managed care companies. However, our business will be affected by policies administered by federal and state healthcare programs, such as Medicare and Medicaid, as well as private third-party payors, which often follow the policies of the state and federal healthcare programs. For example, our business will be indirectly impacted by the ability of a hospital or medical facility to obtain coverage and third-party reimbursement for procedures performed using our products. Many hospitals and clinics in the United States belong to group purchasing organizations (that typically incentivize their hospital members to make a relatively large proportion of purchases from a limited number of vendors of similar products that have contracted to offer discounted prices). Such contracts often include exceptions for purchasing certain innovative new technologies, however. Accordingly, the commercial success of our products may also depend to some extent on our ability to either negotiate favorable purchase contracts with key group purchasing organizations or persuade hospitals and clinics to purchase our product "off contract." These third-party payors may deny reimbursement if they determine that a device used in a procedure was not medically necessary; was not used in accordance with cost-effective treatment methods, as determined by the third-party payor; or was used for an unapproved use. A national or local coverage decision denying Medicare coverage for one or more of our products could result in private insurers and other third party payors also denying coverage. Even if favorable coverage and reimbursement status is attained for our products, less favorable coverage policies and reimbursement rates may be implemented in the future. The cost containment measures that third-party payors and providers are instituting, both within the United States and abroad, could significantly reduce our potential revenues from the sale of our products and any product candidates. We cannot provide any assurances that we will be able to obtain and maintain third party coverage or adequate reimbursement for our products and product candidates in whole or in part.

For inpatient and outpatient procedures, including those that will involve use of our products, Medicare and many other third-party payors in the United States reimburse hospitals at a prospectively determined amount. This amount is generally based on one or more diagnosis related groups, or DRGs, associated with the patient's condition for inpatient treatment and generally based on ambulatory payment classifications, or APCs, associated with the procedures performed as an outpatient at an ambulation surgicenter. Each DRG or APC is associated with a level of payment and may be adjusted from time to time, usually annually. Prospective payments are intended to cover most

of the non-physician hospital costs incurred in connection with the applicable diagnosis and related procedures. Implant products, such as those we plan to sell, represent part of the total procedure costs while labor, hospital room and board, and other supplies and services represent the balance of those costs. However, the prospective payment amounts are typically set independently of a particular hospital's actual costs associated with treating a particular patient and implanting a device. Therefore, the payment that a hospital would receive for a particular hospital visit would not typically take into account the cost of our products.

Medicare has established a number of DRGs for inpatient procedures that involve the use of products similar to ours. Although Medicare has authority to create special DRGs for hospital services that more properly reflect the actual costs of expensive or new-technology devices implanted as part of a procedure, it has declined to do so in the past, and we do not expect that it will do so with respect to our current products and product candidates. Medicare's DRG and APC classifications may have implications outside of Medicare, as many other U.S. third-party payors often use Medicare DRGs and APCs for purposes of determining reimbursement.

We believe that orthopedic implants generally have been well received by third-party payors because of the ability of these implants to greatly reduce long-term healthcare costs for patients with degenerative joint disease. However, coverage and reimbursement policies vary from payor to payor and are subject to change. As discussed above, hospitals that purchase medical devices for treatment of their patients generally rely on third-party payors to reimburse all or part of the costs and fees associated with the procedures performed with these devices. Both government and private third-party coverage and reimbursement levels are critical to new product acceptance. Neither hospitals nor surgeons are likely to use our products if they do not receive reimbursement for the procedures adequate to cover the cost of our products.

While it is expected that hospitals will be able to obtain coverage for procedures using our products, the level of payment available to them for such procedures may change over time. State and federal healthcare programs, such as Medicare and Medicaid, closely regulate provider payment levels and have sought to contain, and sometimes reduce, payment levels. Commercial insurers and managed care plans frequently follow government payment policies and are likewise interested in controlling increases in the cost of medical care. These third-party payors may deny payment if they determine that a procedure was not medically necessary, a device used in a procedure was not used in accordance with cost-effective treatment methods, as determined by the third-party payor, or was used for an unapproved use. Further, beginning January 1, 2021 and over the course of a three-year period, CMS will eliminate the inpatient only list for Medicare which will result in all spine procedures being payable in the outpatient setting. Reimbursement levels in the hospital outpatient and ASC settings are typically lower than for the hospital inpatient setting and may not be adequate to cover the cost of innovative and novel medical devices.

In addition, some payors are adopting pay-for-performance programs that differentiate payments to healthcare providers based on the achievement of documented quality-of-care metrics, cost efficiencies, or patient outcomes. These programs are intended to provide incentives to providers to find ways to deliver the same or better results while consuming fewer resources. As a result of these programs, and related payor efforts to reduce payment levels, hospitals and other providers are seeking ways to reduce their costs, including the amounts they pay to medical device suppliers. Adverse changes in payment rates by payors to hospitals could adversely impact our ability to market and sell our products and negatively affect our financial performance.

In international markets, healthcare payment systems vary significantly by country and many countries have instituted price ceilings on specific product lines. There can be no assurance that our products will be considered cost-effective by third-party payors, that reimbursement will be available or, if available, that the third-party payors' reimbursement policies will not adversely affect our ability to sell our products profitably.

Member countries of the European Union offer various combinations of centrally financed healthcare systems and private health insurance systems. The relative importance of government and private systems varies from country to country. Governments may influence the price of medical devices through their pricing and reimbursement rules and control of national healthcare systems that fund a large part of the cost of those products to consumers. Some jurisdictions operate positive and negative list systems under which products may be marketed only once a reimbursement price has been agreed upon. Some of these countries may require, as condition of obtaining reimbursement or pricing approval, the completion of clinical trials that compare the cost-effectiveness of a particular product candidate to currently available therapies. Some E.U. member states allow companies to fix their own prices for devices but monitor and control company profits. The choice of devices is subject to constraints imposed by the availability of funds within the purchasing institution. Medical devices are most commonly sold to hospitals or healthcare facilities at a price set by negotiation between the buyer and the seller. A contract to purchase products may result from an individual initiative or as a result of a competitive bidding process. In either case, the purchaser pays the supplier, and payment terms vary widely throughout the European Union. Failure to obtain favorable negotiated prices with hospitals or healthcare facilities could adversely affect sales of our products.

Employees

As of December 31, 2022, we had 41 employees. We believe that our success will depend, in part, on our ability to attract and retain qualified personnel. We have never experienced a work stoppage due to labor difficulties and believe that our relations with our employees are good. None of our employees are represented by labor unions. We strive toward having a diverse team of employees and are committed to equality, inclusion and workplace diversity.

LEGAL PROCEEDINGS

We are currently not a party to any material legal proceedings. However, our industry is characterized by frequent claims and litigation, including claims regarding intellectual property and product liability. As a result, we may be subject to various legal proceedings in the future.

DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

The following table sets forth the names, ages, and positions with SINTX for each of our directors.

Name	Age	Positions
B. Sonny Bal, M.D.	60	Chairman of the Board of Directors, President and Chief Executive Officer
David W. Truetzel	65	Director
Jeffrey S. White	68	Director
Eric A. Stookey	52	Director
Mark Froimson, M.D.	61	Director

Our Board is divided into three classes (Class I, Class II and Class III) with staggered three-year terms. Directors in each class are elected to serve for three-year staggered terms that expire in successive years. Officers serve at the discretion of our Board. The following is information on the business experience of each director now serving and a discussion of the qualifications, attributes and skills that led to the Board of Directors' conclusion that each one is qualified to serve as a director.

The following is a brief summary of the background of each of our directors:

Class III Directors— continuing directors with a term expiring at the 2023 annual meeting of stockholder.

B. Sonny Bal, M.D. has served on our Board of Directors since February 2012, as Chairman of our Board of Directors since August 2014 and as our President and Chief Executive Officer since October 2014. Dr. Bal was a tenured Professor in Orthopaedic Surgery at the University of Missouri, Columbia, and has an extensive history of research into silicon nitride ceramics. He was Adjunct Professor of Material Sciences at Missouri Science and Technology University at Rolla. Dr. Bal is a member of the American Academy of Orthopaedic Surgeons, the American Association of Hip and Knee Surgeons, and the International Society of Technology in Arthroplasty. Dr. Bal received his M.D. degree from Cornell University and an M.B.A. from Northwestern University, a J.D. from the University of Missouri, and a Ph.D. in Engineering from the Kyoto Institute of Technology in Japan. We believe that Dr. Bal's breadth of experience and scientific expertise in silicon nitride qualifies him to serve as our Chairman, President and Chief Executive Officer.

Jeffrey S. White has served on our Board of Directors since January 2014. From January 2013 to 2018, Mr. White served as Principal at Medtech Advisory Group LLC, a firm he founded that advises early and mid-stage medical technology firms. In that capacity Mr. White has consulted MiMedx Group Inc., the leading amniotic tissue and allograft regenerative biomaterials firm since mid-2015 and served as Vice President, Product Management Strategies at MiMedix. Mr. White previously served as a director of Residency Select LLC, a company which offers psychometric assessment, training and compliance products to medical and surgical residency programs. Mr. White also served in 2014 and 2015 as President and director of Liventa Bioscience LLC, a provider of specialty amniotic tissue allografts for use in surgical and wound care applications. From May 2006 to December 2012 he served as Global Director of Business Development for Synthes Inc., a global orthopedic firm that was acquired by Johnson and Johnson in 2012. Mr. White has served as Chief Executive Officer and/or co-founder of several start-up surgical device firms and has previously held executive level positions at United States Surgical Corporation, now part of Medtronic. Mr. White holds a B.S. in Biology from Union College in Schenectady NY. We believe that Mr. White's experience as an executive and founder of medical device companies qualifies him to serve on our Board of Directors.

Class II Directors — continuing directors with a term expiring at the 2025 annual meeting of stockholder.

David W. Truetzel has served on our Board of Directors since our acquisition of US Spine, Inc. in September 2010. Mr. Truetzel has been the general partner of Augury Capital Partners, a private equity fund that invests in life sciences and information technology companies, which he co-founded in 2006. Mr. Truetzel is a director of Enterprise Bank, Inc., Bonfyre, LLC, a provider of enterprise technology management solutions, Paranet, LLC, an IT services provider and ScholarPath, Inc. an educational software platform. Mr. Truetzel holds a B.S. in Business Administration from Saint Louis University and an M.B.A. from The Wharton School. We believe that Mr. Truetzel's financial and managerial expertise qualify him to serve on our Board of Directors.

Eric A. Stookey has served on our Board of Directors since October 2014. Mr. Stookey has served as Chief Operating Officer of Osteoremedies, LLC since March of 2015. From October 2011 until August 2014, Mr. Stookey served as the President of the Extremities-Biologics division at Wright Medical Group Inc. Mr. Stookey also served in various other marketing and sales positions at Wright Medical Group Inc. since 1995, including as the Senior Vice President and Chief Commercial Officer from January 2010 to November 2011, as the Vice President North American Sales from 2007 to January 2010, as the Vice President US Sales from 2005 to 2007, as the Senior Director of Sales, Central Region, from 2003 to 2005 and as the Director of Marketing for Large Joint Reconstruction Products from 2001 to 2003. Mr. Stookey earned his M.B.A. from Christian Brothers University and his B.S. in Business from the Indiana University School of Business. We believe that Mr. Stookey's industry and executive leadership experience qualifies him to serve on our Board of Directors.

Class I Director — continuing director with a term expiring at the 2024 annual meeting of stockholders.

Mark Froimson, M.D. has served on our Board of Directors since February 2019. Dr. Froimson is currently a Principal at Riverside Health Advisors, a consulting company that provides strategic advice and services to health care executive leaders. Dr. Froimson served as the President of the American Association of Hip and Knee Surgeons from March 2017 to March 2018. Previously, he was the Executive Vice President and Chief Clinical Officer of Trinity Health, a major national non-profit Catholic healthcare system comprising 93 hospitals in 22 states. Prior to his executive leadership position at Trinity Health, Dr. Froimson was President and Chief Executive Officer of Euclid Hospital, a Cleveland Clinic Hospital. Dr. Froimson served as a staff surgeon in the Department of Orthopedic Surgery at the Cleveland Clinic for over 16 years, during which time he held a variety of leadership positions, including President of the professional staff, Vice Chair of the Orthopedic and Rheumatologic Institute, and member of the board of governors and board of trustees. Dr. Froimson also serves on the board of directors of Pacira Biosciences, Inc., a publicly traded company on the NASDAQ Stock Market. Dr. Froimson received a B.S. in philosophy from Princeton University, an M.D. from Tulane University School of Medicine and an MBA from the Weatherhead School of Business at Case Western Reserve University.

Executive Officers

Our current executive officers and their respective ages and positions are as follows:

Name	Age	Position
B. Sonny Bal, M.D.	60	Chairman of the Board of Directors, President and Chief Executive Officer, Principal Financial Officer
David O'Brien	57	Chief Operating Officer

The following is a brief summary of the background of each of our executive officers.

B. Sonny Bal, M.D. has served on our Board of Directors since February 2012, as Chairman of our Board of Directors since August 2014 and as our President and Chief Executive Officer since October 2014. Dr. Bal was a tenured Professor in Orthopaedic Surgery at the University of Missouri, Columbia, and has an extensive history of research into silicon nitride ceramics. He was Adjunct Professor of Material Sciences at Missouri Science and Technology University at Rolla. Dr. Bal is a member of the American Academy of Orthopaedic Surgeons, the American Association of Hip and Knee Surgeons, and the International Society of Technology in Arthroplasty. Dr. Bal received his M.D. degree from Cornell University and an M.B.A. from Northwestern University, a J.D. from the University of Missouri, and a Ph.D. in Engineering from the Kyoto Institute of Technology in Japan. We believe that Dr. Bal's breadth of experience and scientific expertise in silicon nitride qualifies him to serve as our Chairman, President and Chief Executive Officer.

David O'Brien has served as our Chief Operating Officer since July 2019. Mr. O'Brien previously served as the Company's Vice President and General Manager from October 2016 to July 2019 and from March 2014 through September 2016, he held prior roles as our Vice President of Operations and Vice President of Manufacturing. Mr. O'Brien has over 30 years of experience in engineering, manufacturing, and operations leadership in advanced materials and medical device organizations. From 2005 to 2014, he fulfilled several engineering leadership roles for Covidien. From 1991 to 2005, he worked for Arnold Magnetic Technologies in the production of ceramic, powder metal and molded magnets in multiple facilities across the U.S. and in England. He has extensive experience with Lean and other Continuous Improvement initiatives. Mr. O'Brien holds an M.S. in Ceramic Engineering from the Georgia Institute of Technology, and a B.S. in Physics from the University of Texas at San Antonio.

Arrangements between Officers and Directors

To our knowledge, there is no arrangement or understanding between any of our officers and any other person, including directors, pursuant to which the officer was selected to serve as an officer.

Family Relationships

None of our directors are related by blood, marriage, or adoption to any other director, executive officer, or other key employees.

Other Directorships

With the exception of Dr. Froimson, who is also on the board of directors of Pacira Biosciences, Inc., a SEC public reporting company, none of the directors of the Company are also directors of issuers with a class of securities registered under Section 12 of the Exchange Act (or which otherwise are required to file periodic reports under the Exchange Act).

Other Involvement in Certain Legal Proceedings

None of our directors or executive officers has been involved in any bankruptcy or criminal proceedings (other than traffic and other minor offenses) or been subject to any of the items set forth under Item 401(f) of Regulation S-K, nor have there been any judgments or injunctions brought against any of our directors or executive officers during the last ten years that we consider material to the evaluation of the ability and integrity of any director or executive officer.

The Board and Committees

Our Board of Directors has five members. The Chairman of the Board and our Chief Executive Officer, B. Sonny Bal, MD, PhD, is a member of the Board and is a full-time employee of SINTX. David W. Truetzel, Eric A. Stookey, Jeffrey S. White, and Mark Froimson are non-employee directors, and the Board has determined that these persons (who constitute a majority of the Board) are "independent directors" under the criteria set forth in Rule 5605(a)(2) of the Nasdaq Listing Rules. The Board met ten (10) times during the year ended December 31, 2022. All directors attended more than seventy-five percent (75%) of the meetings of the Board and committee meetings of which such director was a member held during 2022.

In accordance with our restated Certificate of Incorporation, our Board of Directors is divided into three classes with staggered three-year terms. At each annual meeting of stockholders, the successors to the directors whose terms then expire will be elected to serve until the third annual meeting following such election. Our directors are divided among the three classes as follows:

- The Class I director is Mark Froimson and his term will expire at the annual meeting of stockholders to be held in 2024.
- The Class II directors are David W. Truetzel and Eric A. Stookey, and their terms will expire at the 2025 annual meeting of stockholders.
- The Class III directors are B. Sonny Bal, M.D. and Jeffrey S. White, and their terms will expire at the annual meeting of stockholders to be held in 2023

Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors.

Our Board of Directors has three permanent committees: the Audit Committee, the Compensation Committee, and the Corporate Governance and Nominating Committee. The written charters for these committees are on our website at https://ir.sintx.com/corporate-governance. Our Board of Directors may from time to time establish other standing committees. In addition, from time to time, special committees may be established under the direction of our Board of Directors when necessary to address specific issues.

The following table sets forth a description of the three permanent Board committees and the chairpersons and members of those committees, all of whom are independent directors:

Committee	Independent Chairman	Independent Members	
Audit Committee	David W. Truetzel	Eric A. Stookey	Jeffrey S. White
Compensation Committee	Jeffrey S. White	David W. Truetzel	Eric A. Stookey
Governance and Nominating Committee	Eric A. Stookey	Jeffrey S. White	David W. Truetzel

Corporate Governance and Nominating Committee

The Corporate Governance and Nominating Committee is currently comprised of the following members: Eric A. Stookey (Chairman), David W. Truetzel and Jeffrey S White. Among other items, the Corporate Governance and Nominating Committee is tasked by the Board to: (1) identify individuals qualified to serve as members of the Board and, recommend individuals to be nominated by the Board for election by the stockholders or to be appointed by the Board to fill vacancies consistent with the criteria approved by the Board; (2) develop and periodically evaluate and recommend changes to SINTX's Corporate Governance Guidelines and Code of Ethics, and to review the Company's policies and programs that relate to matters of corporate responsibility, including public issues of significance to the Company and its stakeholders; and (3) oversee an annual evaluation of the performance of the Board. The Board has determined that each of the members of the Corporate Governance and Nominating Committee is "independent" under the standard set forth in Rule 5605(a)(2) of the Nasdaq Listing Rules. The Corporate Governance and Nominating Committee did not meet as a separate committee in 2022, but rather, because the committee is comprised of all three independent directors, governance matters were addressed as necessary in meetings of the Board. The Corporate Governance and Nominating Committee operates under a written charter adopted by the Board of Directors, which sets forth the responsibilities and powers delegated by the Board to the Corporate Governance and Nominating Committee.

Board Nominations

In considering Board candidates, the Board seeks individuals of proven judgment and competence who have strong reputations in their respective fields. Although we do not have a formal diversity policy, the Board considers such factors as experience, education, employment history, special talents or personal attributes, anticipated participation in Board activities, and geographic and diversity factors. The process for identifying and evaluating nominees would include detailed consideration of the recommendations and opinions of members of our Board, our executive officers, and our stockholders. There would be no difference in the process of evaluation of candidates recommended by a stockholder and those recommended by other sources.

The Nominating and Governance Committee has adopted a policy and procedures for shareholders to recommend nominees to the Company's Board. The Committee will only consider qualified proposed nominees that meet the qualification standards set forth on Appendix A to the Committee's charter available on the Company's website at www.SINTX.com. Pursuant to the policy, only shareholders who meet minimum percentage ownership requirements as established by the Board may make recommendations for consideration by the Committee. At this time, the Board has set a minimum percentage ownership of 5% of the Company's issued and outstanding shares of common stock for a period of at least one year. To make recommendations, a shareholder must submit the recommendation in writing by mail, courier or personal delivery to: Corporate Secretary, SINTX Technologies, Inc., 1885 West 2100 South, Salt Lake City, UT 84119. For each annual meeting the Committee will consider only one proposed nominee from each shareholder or shareholder group (within the meaning of Regulation 13D under the Exchange Act).

The recommendation must set forth (1) the name, address, including telephone number, of the recommending shareholder or shareholder group; (2) the number of the Company's shares of common stock held by such shareholder and proof of ownership if the shareholder is not a holder of record; and (3) a statement that the shareholder has a good faith intention of holding the shares through the record date of the Company's next annual meeting. For shareholder groups this information must be submitted for each shareholder in the group.

The recommendation must set forth in relation to the proposed nominee being recommended by the shareholder: (1) the information required by Items 401, 403 and 404 of Regulation S-K under the Exchange Act, (2) any material relationships or agreements between the proposed nominee and the recommending shareholder or the Company's competitors, customers, labor unions or other persons with special interests in the Company; (3) a statement regarding the qualifications of the proposed nominee to serve on the Board; (4) a statement that the proposed nominee can fairly represent the interests of all shareholders of the Company; and (5) a signed consent by the proposed nominee to being interviewed by the Nominating and Governance Committee.

Recommendations must be made not later than 120 calendar days prior to the first anniversary of the date of the proxy statement for the prior annual meeting of shareholders. In the event that the date of the annual meeting of shareholders for the current year is more than 30 days following the first anniversary date of the annual meeting of shareholders for the prior year, the submission of a recommendation will be considered timely if it is submitted not earlier than the close of business on the 120 days prior to such annual meeting and not later than the close of business on the later of 90 days prior to such annual meeting or the close of business 10 days following the day on which public announcement of the date of such meeting is first made by the Company.

Audit Committee

We have a standing Audit Committee and audit committee charter, which complies with Rule 10A-3 of the Exchange Act, and the requirements of the Nasdaq Listing Rules. Our Audit Committee was established in accordance with Section 3(a)(58)(A) of the Exchange Act. The Audit Committee is currently comprised of the following members: David W. Truetzel (Chairman), Eric A. Stookey and Jeffrey S White. The Audit Committee provides oversight for financial reporting matters, internal controls, and compliance with the Company's financial policies, and meets with its auditors when appropriate. The Audit Committee did not meet as a separate committee in 2022, but rather, because the committee is comprised of all three independent directors, committee matters were addressed as necessary in meetings of the Board. The Board has determined that David W. Truetzel is an "audit committee financial expert" within the meaning of Item 407(d)(5) of Regulation S-K. Further, the Board has determined that each of David W. Truetzel, Jeffrey S. White and Eric A. Stookey are "independent" under the standard set forth in Rule 5605(a)(2) of the Nasdaq Listing Rules. The Audit Committee operates under a written charter adopted by the Board of Directors, which sets forth the responsibilities and powers delegated by the Board to the Audit Committee.

Compensation Committee

The Compensation Committee of the Board is comprised of the following members: Jeffrey S. White, (Chairman), David W. Truetzel and Eric A. Stookey. The Board has determined that each of David W. Truetzel, Jeffrey S. White and Eric A. Stookey are "independent" under the standard set forth in Rule 5605(a)(2) of the Nasdaq Listing Rules. The Compensation Committee recommends to the Board for determination compensation of our executive officers, including the chief executive officer, and addresses salary and benefit matters for other key personnel and employees of the Company. The Compensation Committee did not meet as a separate committee in 2022, but rather, because the committee is comprised of all three independent directors, committee matters were addressed as necessary in meetings of the Board. The Compensation Committee operates under a written charter adopted by the Board of Directors, which sets forth the responsibilities and powers delegated by the Board to the Compensation Committee.

Code of Business Conduct

The Board has adopted a Code of Business Conduct that applies to all of our employees, officers and directors, including those officers responsible for financial reporting. The code of business conduct is available on our website at https://ir.sintx.com/corporate-governance. We intend to disclose any amendments to the code or any waivers of its requirements on our website.

The Bylaws of the Company provide that no contract or transaction between SINTX and one or more of its directors or officers, or between SINTX and any other corporation, firm, association, or other organization in which one or more of its directors or officers are financially interested, shall be void or voidable solely for this reason, or solely because the director or officer is present at or participates in the meeting of the Board of Directors or committee that authorizes or approves the contract or transaction, or because their votes are counted for such purpose, provided that:

- the material facts as to his, her, or their relationship or interest as to the contract or transaction are disclosed or are known to the Board of Directors or the committee and noted in the minutes, and the Board of Directors or committee authorizes the contract or transaction in good faith by the affirmative vote of a majority of disinterested directors, even though the disinterested directors are less than a quorum;

- the material facts as to his, her, or their relationship or interest as to the contract or transaction are disclosed or are known to the stockholders entitled to vote thereon and the contract or transaction is specifically approved in good faith by vote of the stockholders; or

- the contract or transaction is fair as to SINTX as of the time it is authorized, approved or ratified by the Board of Directors, a committee thereof, or the stockholders.

EXECUTIVE COMPENSATION

The following discussion relates to the compensation of our "named executive officers."

Summary Compensation Table

The following table sets forth information about certain compensation awarded or paid to our named executive officers for the 2022 and 2021 fiscal years.

Name and Principal Position	Year	Salary	Bonus	Non-Equity Incentive Plan Compensation	Stock Awards	Option Awards	All Other Comp (1)	Total Compensation
B. Sonny Bal	2022	$ 400,000	$ 31,500	$ -	$ 7,616	$ 62,207	$ 10,462	$ 511,784
Chief Executive Officer	2021	$ 400,000	$ 40,989	$ -	$ -	$ 38,291	$ 3,807	$ 483,087
Bryan McEntire (2)	2022	9,283(3)	-	-	-	-	-	9,283
Chief Scientific Officer	2021	252,388	21,523	-	-	28,053	10,096	312,060

David O'Brien	2022	300,710	20,300	-	15,677	44,179	11,037	391,903
Chief Operating Officer	2021	300,000	25,279	-	7,888	28,053	8,999	370,219

(1) Amount reflects matching of 401(k) contributions paid by us, unless otherwise noted.
(2) Dr. McEntire retired on December 31, 2021 and is no longer an employee of the Company.
(3) Represents final payout of accrued PTO.

Narrative Disclosure to Summary Compensation Table. We do not have written employment agreements with any of our executive officers. All of our executive officers serve on an at-will basis. The base salaries for our named executive officers were determined by our compensation committee after reviewing a number of factors, including: the responsibilities associated with the position, the seniority of the executive's position, the base salary level in prior years, and our financial position; and for executive officers other than our Chief Executive Officer, recommendations made by our Chief Executive Officer. The Board, on an annual basis, adopts an executive bonus payment plan that is designed to provide executive officers with annual incentive compensation based on the achievement of certain pre-established performance objectives. By utilizing a combination of objective and subjective performance factors critical to our success, this program incentivizes our executive officers to achieve results that benefit them and the Company. Performance factors include the achievement of predetermined financial performance objectives, adherence to financial discipline measures and achievement of business development, product development and long-term business stability. The Board may modify or re-weight the objectives during the course of the fiscal year, if necessary, to reflect changes in our business plan.

Outstanding Equity Awards at Fiscal Year-End

The following table shows information regarding equity awards held by our named executive officers as of December 31, 2022:

	Number of Securities Underlying Unexercised Options (#)(1)		Option Exercise	Option Expiration	Number of Restricted Stock Units that have not vested	Market value of shares or units of stock that have not vested ($)
Name	Exercisable	Unexercisable	Price	Date		
Sonny Bal	440	60(2)	$ 47.00	4/21/2030	-	$ -
	413	337(3)	193.00	3/2/2031	32	308
	-	750(4)	49.00	1/26/2032	214	2,074
					-	-
David O'Brien	440	60(5)	47.00	4/21/2030	60	581
	275	225(6)	193.00	3/2/2031	20	189
	0	500(7)	49.00	1/26/2032	138	1,334

(1) The options have not been, and may never be, exercised, and actual gains, if any, on exercise will depend on the value of the shares of common stock on the date of exercise.

(2) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

(3) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

(4) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

(5) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

(6) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

(7) 28% of the stock option vests on the one-year anniversary of the date of the grant and 3% per month thereafter.

401(k) Plan

We offer our executive officers, including our named executive officers, retirement benefits, including participation in our tax-qualified profit sharing plan that includes a "cash-or-deferred" (or 401(k)) feature in the same manner as other employees. The plan is intended to satisfy the requirements of Section 401 of the Internal Revenue Code. Our employees may elect to reduce their current compensation by up to the statutorily prescribed annual limit and have a like amount contributed to the plan. In addition, we may make discretionary and/or matching contributions to the plan in amounts determined annually by our Board. We currently elect to match the contributions of our employees who participate in our 401(k) plan as follows: a match of 100% on the first 3% of compensation contributed by a plan participant and a match of 50% on amounts above 3%, up to 5%, of compensation contributed by a plan participant.

Potential Payments upon Termination or Change in Control

We had entered into certain agreements and maintained certain plans that may have required us to make certain payments and/or provide certain benefits to the executive officers named in the Summary Compensation Table in the event of a termination of employment or change in control.

Pursuant to severance agreements that we have entered into with each of our named executive officers, upon the consummation of a change in control, all outstanding options, restricted stock and other such rights held by the executives will fully vest. Additionally, if a change in control occurs and at any time during the one-year period following the change in control (i) we or our successor terminate the executive's employment other than for cause (but not including termination due to the executive's death or disability) or (ii) the executive terminates his employment for good reason, then such executive has the right to receive payment consisting of a lump sum payment equal to two times his highest annual salary with us during the preceding three-year period, including the year of such termination and including bonus payments (measured on a fiscal year basis), but not including any reimbursements and amounts attributable to stock options and other non-cash compensation. "Change in control" is defined in the severance agreements as occurring upon: (i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becoming the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities representing 50% or more of the total voting power represented by our then outstanding voting securities (excluding securities held by us or our affiliates or any of our employee benefit plans) pursuant to a transaction or a series of related transactions which our Board did not approve; (ii) a merger or consolidation of our company, other than a merger or consolidation which would result in our voting securities outstanding immediately prior thereto continuing to represent at least 50% of the total voting securities or such surviving entity or parent of such corporation outstanding immediately after such merger or consolidation; or (iii) the approval by

our stockholders of an agreement for the sale or disposition of all or substantially all of our assets. As defined in the severance agreements, "cause" means: (i) the executive's commission of a felony (other than through vicarious liability or through a motor vehicle offense); (ii) the executive's material disloyalty or dishonesty to us; (iii) the commission by the executive of an act of fraud, embezzlement or misappropriation of funds; (iv) a material breach by the executive of any material provision of any agreement to which the executive and we are party, which breach is not cured within 30 days after our delivery to the executive of written notice of such breach; or (v) the executive's refusal to carry out a lawful written directive from our Board. "Good reason" as defined in the severance agreements means, without the executive's consent: (i) a change in the principal location at which the executive performs his duties to a new work location that is at least 50 miles from the prior location; or (ii) a material change in the executive's compensation, authority, functions, duties or responsibilities, which would cause his position with us to become of less responsibility, importance or scope than his prior position, provided, however, that such material change is not in connection with the termination of the executive's employment with us for any reason.

In the event that an officer entitled to receive or receives payment or benefit under the severance agreements described above, or under any other plan, agreement or arrangement with us, or any person whose action results in a change in control or any other person affiliated with us and it is determined that the total amount of payments will be subject to excise tax under Section 4999 of the Internal Revenue Code, or any similar successor provisions, we will be obligated to pay such officer a "gross up" payment to cover all taxes, including any excise tax and any interest or penalties imposed with respect to such taxes due to such payment.

Code of Business Conduct Violations

It is our policy under our Code of Business Conduct to take appropriate action against any executive officer whose actions are found to violate the Code or any other policy of SINTX. Disciplinary actions may include immediate termination of employment and, where SINTX has suffered a loss, pursuing its remedies against the executive officer responsible. SINTX will cooperate fully with the appropriate authorities where laws have been violated.

Role of the Board in Risk Oversight

Risk is inherent with every business, and how well a business manages risk can ultimately determine its success. Management is responsible for the day-to-day management of the risks that we face, while our Board of Directors, as a whole and through its committees, has responsibility for the oversight of risk management. In its risk oversight role, our Board of Directors is responsible for satisfying itself that the risk management processes designed and implemented by management are adequate and functioning as designed.

Our Board of Directors does not have a standing risk management committee, but rather administers this oversight function directly through our Board of Directors as a whole, as well as through various standing committees of the Board of Directors that address risks inherent in their respective areas of oversight. In particular, our Board of Directors is responsible for monitoring and assessing strategic risk exposure, including a determination of the nature and level of risk appropriate for us. Our Audit Committee has the responsibility to consider and discuss our major financial risk exposures and the steps our management has taken to monitor and control these exposures, including guidelines and policies to govern the process by which risk assessment and management is undertaken. The Audit Committee also monitors oversight of the performance of our internal audit function. Our Corporate Governance and Nominating Committee monitors the effectiveness of our corporate governance guidelines, including whether they are successful in preventing illegal or improper liability-creating conduct. Our Compensation Committee assesses and monitors whether any of our compensation policies and programs have the potential to encourage excessive risk-taking or promote behaviors contra to our Code of Business Conduct.

Board Compensation

The following table shows the total compensation paid or accrued during the fiscal year ended December 31, 2022 to each of our non-employee directors.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)(5)	Total ($)
David W. Truetzel (1)	$ 120,780	$ -	$ 20,069	$ 140,849
Jeffrey S. White (2)	40,000	-	20,069	60,069
Eric A. Stookey (3)	40,000	-	20,069	60,069
Mark Froimson (4)	40,000	-	19,257	59,257

(1) As of December 31, 2022 Mr. Truetzel had 900 option awards outstanding.

(2) As of December 31, 2022 Mr. White had 900 option awards outstanding.

(3) As of December 31, 2022 Mr. Stookey had 900 option awards outstanding.

(4) As of December 31, 2022 Mr. Froimson had 850 option awards outstanding.

(5) The amounts in this column do not reflect compensation actually received by our non-employee directors nor do they reflect the actual value that will be recognized by the non-employee directors. Instead, the amounts reflect the aggregate grant date fair value computed in accordance with Accounting Standards Codification ("ASC") 718 of awards of stock options made to non-employee directors for the fiscal year ended December 31, 2022 but excludes an estimate for forfeitures. The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model.

The following compensation schedule sets forth compensation for non-employee directors (paid on a quarterly basis) as approved by the Board:

- Annual Retainer of $40,000 paid in 12 equal monthly installments of $3,333 each;
- $1,000 for each board and committee meeting attended in person;
- $500 for each board and committee meeting attended via telephone or other remote medium; and
- Reimbursement of reasonable expenses as supported by documentation and receipts.

A new Board appointee receives an award of 40,000 stock options upon appointment. Further, each non-employee member of the Board is awarded an option grant for 15,000 stock options on an annual basis.

The chair of the Audit Committee is paid an annual retainer of $120,000 payable in monthly increments of $10,000 each.

Equity Compensation Plan Information

The following table sets forth information as of December 31, 2022 relating to all of our equity compensation plans:

Plan Category	(a) Number of Securities to be Issued upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted-average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance under Equity Compensation Plans (Excluding Securities Referenced in Column (a))
Equity compensation plans approved by stockholders	12,912[1]	$ 239.43[2]	6,268
Equity compensation plans not approved by Stockholders	-	-	-
Total	12,912[1]	$ 239.43[2]	6,268

(1) Includes options outstanding under our 2012 Equity Incentive Plan.

(2) Represents weighted-average exercise price per share of common stock acquirable upon exercise of outstanding stock options.

2020 Equity Incentive Plan

The 2020 Plan provides for the grant of nonqualified stock options, incentive stock options, restricted stock, restricted stock units, stock appreciation rights (SARs), and performance share awards to employees, officers, consultants, advisors, non-employee directors and independent contractors designated by either the board of directors of the Company or if so authorized by the board of directors, the Compensation Committee (the "Committee") of the Board of Directors. Under the 2020 Plan, the maximum number of shares of common stock which may be issued, subject to adjustment as described below, is 10,190 shares of common stock, which includes 25 shares that have been rolled over from our 2012 Plan. In addition, 4 shares that were subject to outstanding awards under our 2012 Plan were forfeited or reacquired by the Company due to termination or cancellation of the awards and are now part of the total number of shares of common stock permitted to be granted under the 2020 Plan. For stock options and SARs, the aggregate number of shares with respect to which such awards are exercisable, rather than the number of shares actually issued upon exercise, will be counted against the number of shares available for awards under the 2020 Plan. If awards under the 2020 Plan expire or otherwise terminate without being exercised, the shares not acquired pursuant to such awards again become available for issuance under the 2020 Plan in accordance with its terms. However, under the following circumstances, shares will not again be available for issuance under the 2020 Plan: (i) shares unissued due to a "net exercise" of a stock option, (ii) any shares withheld, or shares tendered to satisfy tax withholding obligations with respect to a stock option or SAR, (iii) shares covered by a SAR that is not settled in shares upon exercise and (iv) shares repurchased using stock option exercise proceeds.

Administration

The 2020 Plan is to be administered by the Committee, or in the board of director's sole discretion, by the board of directors.

Subject to the express provisions of the 2020 Plan, the Committee has authority to administer and interpret the 2020 Plan, including the authority to determine who is eligible to participate in the 2020 Plan and to whom and when awards are granted under the 2020 Plan, to grant awards, to determine the number of shares of common stock subject to awards and the exercise or purchase price of such shares under an award, to establish and verify the extent of satisfaction of any performance criteria applicable to awards, to prescribe and amend the terms of the agreements evidencing awards made under the 2020 Plan, and to make other determinations deemed necessary or advisable for the administration of the 2020 Plan.

Eligibility

Participants under the 2020 Plan are limited to employees, officers, non-employee directors, and consultants providing services to the Company, or any person to whom an offer of employment or engagement with the Company is extended.

Transferability

Generally, no award (other than fully vested and unrestricted shares) and no right under any such award shall be transferable by a participant other than by will or by the laws of descent and distribution, and no award (other than fully vested and unrestricted shares) or right under any such award may be pledged, alienated, attached or otherwise encumbered.

Corporate Transactions

In the event of any Change-in-Control Event (as defined in the 2020 Plan), reorganization, merger, consolidation, split-up, spin-off, combination, plan of arrangement, take-over bid or tender offer, repurchase or exchange of common stock or other securities of the Company or any other similar corporate transaction or event involving the Company, all outstanding options and SARs shall become immediately exercisable with respect to 100% of the shares subject to such options or SARs, and/or the restricted period shall expire immediately with respect to 100% of the outstanding shares of restricted stock awards or restricted stock units. Further, with respect to performance share awards and cash awards, in the event of a Change-in-Control, all performance goals or other vesting criteria will be deemed achieved at 100% of target levels and all other terms and conditions will be deemed met.

Amendment and Termination

No awards may be granted pursuant to the 2020 Plan after the ten-year anniversary of the effective date of the 2020 Plan which, if the shareholders approve the amendment and restatement of the 2020 Plan, will be April 21, 2030.

The Committee may amend, modify or terminate an outstanding award, provided, however, that, except as expressly provided in the 2020 Plan, the Committee may not, without the participant's consent, amend, modify or terminate an outstanding award unless it determines that the action would not adversely alter or impair the terms or conditions of such award. However, the Committee reserves the right to reprice any previously granted "underwater" option or SAR by (i) lowering the exercise price, (ii) canceling the underwater option or SAR and granting a substitute award, or (iii) repurchasing the underwater option or SAR.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Transactions with Related Persons

We have not entered into any transactions since January 1, 2022 to which we have been a party, in which the amount involved in the transaction exceeded the lesser of $120,000 or one percent of the average of our total assets at year-end for the last two completed fiscal years, and in which any of our directors, executive officers or, to our knowledge, beneficial owners of more than 5% of our common stock, on an as converted basis, or any member of the immediate family of any of the foregoing persons had or will have a direct or indirect material interest, other than equity and other compensation, termination, change in control and other arrangements, which are described above under "Executive and Director Compensation."

Indemnification Agreements: We have entered into indemnification agreements with each of our executive officers and directors that require us to indemnify such persons against any and all expenses, including judgments, fines or penalties, attorney's fees, witness fees or other professional fees and related disbursements and other out-of-pocket costs incurred, in connection with any action, suit, arbitration, alternative dispute resolution mechanism, investigation, inquiry or administrative hearing, whether threatened, pending or completed, to which any such person may be made a party by reason of the fact that such person is or was a director, officer, employee or agent of our company, provided that such director or officer acted in good faith and in a manner that the director or officer reasonably believed to be in, or not opposed to, our best interests. The indemnification agreements also set forth procedures that will apply in the event of a claim for indemnification thereunder. We believe that these provisions and agreements are necessary to attract and retain qualified persons as directors and officers.

Policy for Review of Related Party Transactions

We have a policy for the review of transactions with related persons as set forth in our Audit Committee Charter and internal practices. The policy requires review, approval or ratification of all transactions in which we are a participant and in which any of our directors, executive officers, shareholders holding more than 5% of our outstanding common stock, an immediate family member of any of the foregoing persons or any other person who the Board determines may be considered to be a related person has a direct or indirect material interest and which meet the threshold requirements set forth in Item 404 of Regulation S-K under the Exchange Act (typically $120,000 or more in value). All related party transactions must be reported for review by the Audit Committee pursuant to the Audit Committee's charter.

In reviewing and approving such transactions, the Audit Committee shall obtain, or shall direct management to obtain on its behalf, all information that the Audit Committee believes to be relevant and important to a review of the transaction prior to its approval. Following receipt of the necessary information, a discussion shall be held of the relevant factors if deemed to be necessary by the Audit Committee prior to approval. No related party transaction shall be entered into prior to the completion of these procedures.

Following its review, the Audit Committee determines whether these transactions are in, or not inconsistent with, the best interests of the Company and its stockholders, taking into consideration whether they are on terms no less favorable to the Company than those available with other parties and the related person's interest in the transaction.

Our policy for review of transactions with related persons was followed in all of the transactions set forth above and all such transactions were reviewed and approved in accordance with our policy for review of transactions with related persons.

PRINCIPAL STOCKHOLDERS

The following table sets forth certain information regarding the beneficial ownership of our common stock as of December 31, 2022 by:

- each of our current directors;
- each of our executive officers; and
- all of our directors and executive officers as a group;
- each stockholder known by us to own beneficially more than 5% of our Common Stock.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. Shares of common stock that may be acquired by an individual or group within 60 days of December 31, 2022, pursuant to the exercise or vesting of options or warrants or conversion of convertible promissory notes, are deemed to be outstanding for the purpose of computing the percentage ownership of such individual or group but are not deemed to be outstanding for the purpose of computing the percentage ownership of any other person shown in the table. Percentage of shares beneficially owned is based on 542,146 shares issued and outstanding on December 31, 2022.

Except as indicated in footnotes to this table, we believe that the stockholders named in this table have sole voting and investment power with respect to all shares of common stock shown to be beneficially owned by them, based on information provided to us by such stockholders. The address for each director and executive officer listed is: c/o SINTX Technologies, Inc., 1885 West 2100 South, Salt Lake City, Utah 84119.

	Shares Beneficially Owned	
Name and Address of Beneficial Owner	**Number**	**Percentage**
Five Percent Stockholders:		
none		
Directors and Named Executive Officers:		
B. Sonny Bal, M.D. (1)	1,189	*
David W. Truetzel (2)	900	*
Jeffrey S. White (3)	900	*
Eric A. Stookey (4)	900	*
David O'Brien (5)	1,487	*
Mark Froimson, M.D. (6)	850	*
All executive officers and directors as a group (6 persons)	6,225	1%

* Indicates ownership of less than 1% of the outstanding shares of the Company's common stock.

(1) Represents 25 shares of Common Stock, restricted stock units exercisable into 3 shares of Common Stock within 60 days of December 31, 2021 and options and warrants to purchase 1,161 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022.

(2) Represents options to purchase 900 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022.

(3) Represents options to purchase 900 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022.

(4) Represents options to purchase 900 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022.

(5) Represents 510 shares of Common Stock, restricted stock units exercisable into 32 shares of Common Stock within 60 days of December 31, 2021, and options to purchase 945 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022

(6) Represents options to purchase 850 shares of Common Stock that are currently exercisable within 60 days of December 31, 2022.

DESCRIPTION OF SECURITIES

As of the date of this prospectus, our Restated Certificate of Incorporation authorizes us to issue 250,000,000 shares of common stock, par value $0.01 per share, and 130,000,000 shares of preferred stock, par value $0.01 per share. The following is a summary of the rights of our common and preferred stock and some of the provisions of our Restated Certificate of Incorporation and Amended and Restated Bylaws, the securities being offered in this Offering, our outstanding warrants, and the Delaware General Corporation Law. Because it is only a summary, it does not contain all the information that may be important to you and is subject to and qualified in its entirety by our Restated Certificate of Incorporation and our Restated Bylaws, a copy of each of which has been incorporated as an exhibit to the registration statement of which this prospectus forms a part.

Our Restated Certificate of Incorporation and our Amended and Restated Bylaws contain certain provisions that are intended to enhance the likelihood of continuity and stability in the composition of the board of directors, which may have the effect of delaying, deferring or preventing a future takeover or change in control of the Company unless such takeover or change in control is approved by our board of directors.

Common Stock

As of December 31, 2022, there were 542,146 shares of common stock outstanding. In addition, as of December 31, 2022 there were: (i) 12,912 shares of common stock subject to outstanding options and restricted stock units; (ii) 3,922 shares of common stock reserved for future issuance under our 2020 Equity Incentive Plan; (iii) 640,131 shares of common stock reserved for future issuance under outstanding common stock warrants; (iv) 3,104 shares of common stock reserved for issuance on conversion of 26 shares of the Series B Preferred Stock; (v) 338 shares of common stock reserved for issuance on conversion of 50 shares of the Series C Preferred Stock; and (vi) 13,641 shares of common stock reserved for issuance on conversion of 206 shares of the Series D Preferred Stock. Each outstanding share of common stock entitles the holder thereof to one vote per share on all matters. Our Amended and Restated Bylaws provide that any vacancy occurring in the board of directors may be filled by the affirmative vote of a majority of the remaining directors. Stockholders do not have preemptive rights to purchase shares in any future issuance of our common stock. In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to receive, ratably, the net assets available to stockholders after payment of all creditors.

Holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders, and do not have cumulative voting rights. Accordingly, the holders of a majority of the shares of our common stock entitled to vote can elect all of the directors standing for election. Subject to preferences that may be applicable to any outstanding shares of preferred stock, holders of our common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our board of directors out of funds legally available for dividend payments. All outstanding shares of our common stock are fully paid and nonassessable, and any shares of our common stock to be sold pursuant to this prospectus will be fully paid and nonassessable. The holders of common stock have no preferences or rights of conversion, exchange, pre-emption or other subscription rights. There are no redemption or sinking fund provisions applicable to our common stock. In the event of any liquidation, dissolution or winding-up of our affairs, holders of our common stock will be entitled to share ratably in our assets that are remaining after payment or provision for payment of all of our debts and obligations and after liquidation payments to holders of outstanding shares of preferred stock, if any.

The transfer agent and registrar for our common stock is American Stock Transfer and Trust Company. The transfer agent and registrar's address is 59 Maiden Lane, New York, New York 10038. Their telephone number is 1-800-937-5449. Our common stock is listed on The NASDAQ Capital Market under the symbol "SINT".

Preferred Stock

Our Board of directors has the authority under our Restated Certificate of Incorporation, without further action by our stockholders, to issue up to 130,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences, privileges and restrictions of the shares of each wholly unissued series, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preference and sinking fund terms, and to increase or decrease the number of shares of any such series (but not below the number of shares of such series then outstanding). Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could have the effect of restricting dividends on our common stock, diluting the voting power of our common stock, impairing the liquidation rights of our common stock or otherwise adversely affecting the rights of holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change of control and may adversely affect the market price of our common stock.

Description of Securities Included in this Offering

We are offering Units, each Unit consisting of one share of common stock, one Class C Warrant to purchase one share of common stock, and one-half of one Class D Warrant, each whole Class D Warrant to purchase one share of common stock.

We are offering to each purchaser whose purchase of shares of common stock in this offering would otherwise result in the purchaser, together with its affiliates, beneficially owning more than 4.99% (or, at the election of the holder, 9.99%) of our outstanding shares of common stock immediately following the consummation of this offering, the opportunity to purchase, if the purchaser so chooses, Units containing pre-funded warrants, in lieu of shares of common stock that would otherwise result in the purchaser's beneficial ownership exceeding 4.99% (or, at the election of the holder, 9.99%) of our outstanding shares of common stock. For each pre-funded warrant we sell (without regard to any limitation on exercise set forth therein), the number of shares of common stock we are offering will be decreased on a one-for-one basis. Because one Class C Warrant and one-half of one Class D Warrant is being sold together in this offering with each share of common stock or, in the alternative, each pre-funded warrant to purchase one share of common stock, the number of Class C Warrants and Class D Warrants sold in this offering will not change as a result of a change in the mix of the shares of common stock and pre-funded warrants sold.

We are also registering the shares of common stock issuable from time to time upon exercise of the Class C Warrants, Class D Warrants, and pre-funded warrants included in the Units offered hereby. Our Units have no stand-alone rights and will not be certificated or issued as stand-alone securities. The shares of common stock (or pre-funded warrants), Class C Warrants, and Class D Warrants comprising our Units are immediately separable and will be issued separately in this offering.

The following summary of certain terms and provisions of the pre-funded warrants, Class C Warrants, and Class D Warrants offered hereby is not complete and is subject to, and qualified in its entirety by the provisions of the form of pre-funded warrant, the form of Class C Warrant, and the form of Class D Warrant, which are filed as exhibits to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions set forth in the form of Warrant and form of pre-funded warrant.

Exercisability. The pre-funded warrants are exercisable at any time after their original issuance until they are exercised in full. The Class C Warrants are exercisable at any time after their original issuance and at any time up to the date that is five years after their original issuance. The Class D Warrants are exercisable at any time after their original issuance and at any time up to the date that is three years after their original issuance. Each of the Class C Warrants, Class D Warrants, and the pre-funded warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and, at any time a registration statement registering the issuance of the shares of common stock underlying the Class C Warrants or Class D Warrants, under the Securities Act of 1933, as amended (the "Securities Act") is effective and available for the issuance of such shares, by payment in full in immediately available funds for the number of shares of common stock purchased upon such exercise. If a registration statement registering the issuance of the shares of common stock underlying the Class C Warrants, Class D Warrants, or pre-funded warrants under the Securities Act is not effective or available, the holder may, in its sole discretion, elect to exercise the Class C Warrant, Class D Warrant, or pre-funded warrant through a cashless exercise, in which case the holder would receive upon such exercise the net number of shares of common stock determined according to the formula set forth in the warrant. We may be required to pay certain amounts as liquidated damages as specified in the warrants in the event we do not deliver shares of common stock upon exercise of the warrants within the time periods specified in the warrants. In addition, a holder may also effect an "alternative cashless exercise" on or after the earlier of (i) thirty (30) day anniversary of the date of the effective date of the registration statement of which this prospectus forms a part and (ii) the date on which the aggregate composite trading volume of the common stock as reported by Bloomberg LP beginning on the first trading day after the effective date of the registration statement of which this prospectus forms a part exceeds 4,500,000 shares. In such event, the aggregate number of shares of common stock issuable in such alternative cashless exercise shall equal the product of (x) the aggregate number of shares of common stock that would be issuable upon exercise of the Class C Warrant or Class D Warrant in accordance with the terms of such warrant if such exercise were by means of a cash exercise rather than a cashless exercise and (y) 0.40 with respect to the Class C Warrant or 0.80 with respect to the Class D Warrant. No fractional shares of common stock will be issued in connection with the exercise of a Class C Warrant or Class D Warrant. With respect to any alternative cashless exercise, fractional shares will be rounded down to the nearest whole share.

Fractional Shares. No fractional shares of common stock will be issued in connection with the exercise of a warrant. Other than as described above with respect to alternative cashless exercises, in lieu of fractional shares, we will, at our election, either pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price or round up to the next whole share.

Exercise Limitation. A holder will not have the right to exercise any portion of the pre-funded warrants, Class C Warrants, or Class D Warrants if the holder (together with its affiliates) would beneficially own in excess of 4.99% (or, upon election by a holder prior to the issuance of any warrants, 9.99%) of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the warrants. However, any holder may increase or decrease such percentage to any other percentage not in excess of 9.99%, upon at least 61 days' prior notice from the holder to us with respect to any increase in such percentage.

Exercise Price. The exercise price for the pre-funded warrants is $0.0001 per share. The exercise price per whole share of common stock purchasable upon exercise of the Class C Warrants and the Class D Warrants is $5.60 per share. The exercise price and number of shares of common stock issuable on exercise are subject to appropriate adjustments in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

Transferability. Subject to applicable laws, the Class C Warrants, Class D Warrants, and pre-funded warrants may be offered for sale, sold, transferred or assigned without our consent.

Exchange Listing. We do not intend to list the Class C Warrants, Class D Warrants, or the pre-funded warrants offered in this offering on any securities exchange or other trading market. Without an active trading market, the liquidity of these securities will be limited.

Warrant Agent. The pre-funded warrants, Class C Warrants, and Class D Warrants are expected to be issued in registered form under a warrant agreement between American Stock Transfer & Trust Company, LLC, as warrant agent, and us. The Class C Warrants, Class D Warrants, and the pre-funded warrants shall initially be represented only by one or more global warrants deposited with the warrant agent, as custodian on behalf of The Depository Trust Company (DTC) and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC.

Fundamental Transactions. In the event of a fundamental transaction, as described in the Class C Warrants, Class D Warrants, and pre-funded warrants and generally including, with certain exceptions, any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding shares of common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding shares of common stock, the holders of the Class C Warrants, Class D Warrants, and pre-funded warrants will be entitled to receive upon exercise of the warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the warrants immediately prior to such fundamental transaction. In addition, in the event of a fundamental transaction, we or the successor entity, at the request of a holder of Class C Warrants or Class D Warrants, will be obligated to purchase any unexercised portion of such Class C Warrants or Class D Warrants in accordance with the terms of the Warrants. Additionally, as more fully described in the Warrants, in the event of certain fundamental transactions, the holders of the Warrants will be entitled to receive consideration in an amount equal to the Black Scholes value of the Warrants on the date of consummation of such transaction.

Rights as a Shareholder. Except as otherwise provided in the Class C Warrants, Class D Warrants, or pre-funded warrants or by virtue of such holder's ownership of our shares of common stock, the holder of a Class C Warrant, Class D Warrant, or pre-funded warrant does not have the rights or privileges of a holder of our common stock, including any voting rights, until the holder exercises the warrant. Holders of pre-funded warrants have the right to participate in dividends and certain distributions as specified in the warrant.

Governing Law. The pre-funded warrants, Class C Warrants, Class D Warrants, and warrant agreement are governed by New York law.

Description of Other Outstanding Securities of the Company

Series B Preferred Stock.

Our board of directors designated 15,000 shares of our preferred stock as Series B Preferred Stock. As of December 31, 2022, there were 26 shares of Series B Preferred stock outstanding. The Series B Preferred Stock ranks senior to our common stock and other classes of capital stock with respect to redemption, unless the holders of a majority of the outstanding shares of Series B Preferred Stock consent to the creation of parity stock or senior preferred stock.

Conversion

Each share of Series B Preferred Stock is convertible into shares of our common stock at any time at the holder's option at the Conversion Price described below. We may not effect any conversion of Series B Preferred Stock, with certain exceptions, to the extent that, after giving effect to an attempted conversion, the holder of Series B Preferred Stock (together with such holder's affiliates, and any persons acting as a group together with such holder or any of such holder's affiliates) would beneficially own a number of shares of common stock in excess of 4.99% (or, at the election of the holder, 9.99%) of the shares of our common stock then outstanding after giving effect to such conversion, referred to as the Preferred Stock Beneficial Ownership Limitation; provided, however, that upon notice to us, the holder may increase or decrease the Preferred Stock Beneficial Ownership Limitation, provided that in no event may the Preferred Stock Beneficial Ownership Limitation exceed 9.99% and any increase in the Preferred Stock

Beneficial Ownership Limitation will not be effective until 61 days following notice of such increase from the holder to us.

Subject to certain ownership limitations as described below and certain equity conditions being met, if during any 30 consecutive trading days, the volume weighted average price of our common stock exceeds $13,061 and the daily dollar trading volume during such period exceeds $500,000 per trading day, we have the right to force the conversion of the Series B Preferred Stock into common stock.

Conversion Price.

The Series B Preferred Stock is convertible into shares of common stock by dividing the stated value of the Series B Preferred Stock ($1,100) by $9.21 (the "Conversion Price"). The Conversion Price is subject to adjustment for stock splits, stock dividends, and distributions of common stock or securities convertible, exercisable or exchangeable for common stock, subdivisions, combinations and reclassifications.

Subject to certain exclusions contained in the Certificate of Designation, if we in any manner grant or sell any rights, warrants or options and the lowest price per share for which one share of common stock is at any time issuable upon the exercise of any such option or upon conversion, exercise or exchange of any Common Stock Equivalents (as defined in the Certificate of Designation) issuable upon exercise of any such option, exercise or exchange of any Common Stock Equivalent issuable upon the exercise of such option or otherwise pursuant to the terms thereof is less than the Conversion Price, then such share of common stock will be deemed to be outstanding and to have been issued and sold by us at the time of the granting or sale of such option for such price per share. For purposes of this paragraph only, the "lowest price per share for which one share of common stock is issuable upon the exercise of any such options or upon conversion, exercise or exchange of any Common Stock Equivalent issuable upon exercise of any such option or otherwise pursuant to the terms thereof" will be equal to (1) the lower of (x) the sum of the lowest amounts of consideration (if any) received or receivable by us with respect to any one share of common stock upon the granting or sale of such option, upon exercise of such option and upon conversion, exercise or exchange of any Common Stock Equivalents issuable upon exercise of such option or otherwise pursuant to the terms thereof and (y) the lowest exercise price set forth in such option for which one share of common stock is issuable upon the exercise of any such options or upon conversion, exercise or exchange of any Common Stock Equivalents issuable upon exercise of any such option or otherwise pursuant to the terms thereof. Except as contemplated by the terms of the Certificate of Designation, no further adjustment of the Conversion Price will be made upon the actual issuance of such shares of common stock or of such convertible securities upon the exercise of such options or otherwise pursuant to the terms of or upon the actual issuance of such Common Stock Equivalents.

Subject to certain exclusions contained in the Certificate of Designation, if we in any manner issue or sell any Common Stock Equivalents and the lowest price per share for which one share of common stock is at any time issuable upon the conversion, exercise or exchange thereof or otherwise pursuant to the terms thereof is less than the Conversion Price, then such share of common stock will be deemed to be outstanding and to have been issued and sold by us at the time of the issuance or sale of such convertible securities for such price per share. For purposes of this paragraph only, the "lowest price per share for which one share of common stock is issuable upon the conversion, exercise or exchange thereof or otherwise pursuant to the terms thereof" will be equal to (1) the lower of (x) the sum of the lowest amounts of consideration (if any) received or receivable by us with respect to one share of common stock upon the issuance or sale of the Common Stock Equivalent and upon conversion, exercise or exchange of such convertible security or otherwise pursuant to the terms thereof and (y) the lowest conversion price set forth in such convertible security for which one share of common stock is issuable upon conversion, exercise or exchange thereof or otherwise pursuant to the terms thereof minus (2) the sum of all amounts paid or payable to the holder of such Common Stock Equivalent (or any other person) upon the issuance or sale of such Common Stock Equivalent plus the value of any other consideration received or receivable by, or benefit conferred on, the holder of such Common Stock Equivalent (or any other person). Except as contemplated by the terms of the Certificate of Designation, no further adjustment of the Conversion Price will be made upon the actual issuance of such shares of common stock upon conversion, exercise or exchange of such Common Stock Equivalents or otherwise pursuant to the terms thereof, and if any such issuance or sale of such Common Stock Equivalents is made upon exercise of any options for which adjustment of the Conversion Price has been or is to be made, except as contemplated by the terms of the Certificate of Designation, no further adjustment of the Conversion Price will be made by reason of such issuance or sale.

If the purchase or exercise price provided for in any options, the additional consideration, if any, payable upon the issue, conversion, exercise or exchange of any convertible securities, or the rate at which any convertible securities are convertible into or exercisable or exchangeable for shares of common stock increases or decreases at any time (other than proportional changes in conversion or exercise prices, as applicable, in connection with stock dividends, splits or combination of outstanding common stock) the Conversion Price in effect at the time of such increase or decrease will be adjusted to the Conversion Price which would have been in effect at such time had such options or convertible securities provided for such increased or decreased purchase price, additional consideration or increased or decreased conversion rate, as the case may be, at the time initially granted, issued or sold. If the terms of any option or convertible security that was outstanding as of the date of issuance of the Preferred Stock and related Warrants are increased or decreased in the manner described in the immediately preceding sentence, then such option or convertible security and the shares of common stock deemed issuable upon exercise, conversion or exchange thereof will be deemed to have been issued as of the date of such increase or decrease. No adjustment will be made if such adjustment would result in an increase of the Conversion Price then in effect.

If any option and/or convertible security and/or Adjustment Right is issued in connection with the issuance or sale or deemed issuance or sale of any other securities of the Company (as determined by the holder of Preferred Stock, the "Primary Security", and such option and/or convertible security and/or Adjustment Right (as defined below), the "Secondary Securities" and together with the Primary Security, each a "unit"), together comprising one integrated transaction, the aggregate consideration per share of common stock with respect to such Primary Security will be deemed to be the lower of (x) the purchase price of such unit, (y) if such Primary Security is an option and/or convertible security, the lowest price per share for which one share of common stock is at any time issuable upon the exercise or conversion of the Primary Security in accordance with the paragraphs above and (z) the lowest volume-weighted average price of the common stock on any trading day during the four trading day period immediately following the public announcement of such dilutive issuance. If any shares of common stock, options or convertible securities are issued or sold or deemed to have been issued or sold for cash, the consideration received therefor will be deemed to be the net amount of consideration received by us therefor. If any shares of common stock, options or convertible securities are issued or sold for a consideration other than cash, the amount of such consideration received by us will be the fair value of such consideration, except where such consideration consists of publicly traded securities, in which case the amount of consideration received by us for such securities will be the arithmetic average of the volume-weighted average prices of such security for each of the five (5) trading days immediately preceding the date of receipt. If any shares of common stock, options or convertible securities are issued to the owners of the non-surviving entity in connection with any merger in which we are the surviving entity, the amount of consideration therefor will be deemed to be the fair value of such portion of the net assets and business of the non-surviving entity as is attributable to such shares of common stock, options or convertible securities (as the case may be). The fair value of any consideration other than cash or publicly traded securities will be determined jointly by us and the holder. If such parties are unable to reach agreement within ten (10) days after the occurrence of an event requiring valuation (the "Valuation Event"), the fair value of such consideration will be determined within five trading days after the tenth day following such Valuation Event by an independent, reputable appraiser jointly selected by us and the holder. "Adjustment Right" means any right granted with respect to any securities issued in connection with, or with respect to, any issuance or sale (or deemed issuance or sale in accordance with the paragraph above) of shares of common stock that could result in a decrease in the net consideration received by us in connection with, or with respect to, such securities (including, without limitation, any cash settlement rights, cash adjustment or other similar rights).

In addition, holders of Series B Preferred Stock may be eligible to elect an alternative price in the event we issue certain variable price securities.

Liquidation; Dividends; Repurchases.

In the event of a liquidation, the holders of Series B Preferred Stock are entitled to participate on an as-converted-to-common stock basis with holders of the common stock in any distribution of assets of the Company to the holders of common stock.

Redemption Right.

We hold an option to redeem some or all of the Series B Preferred Stock at any time after the six-month anniversary of its issuance date at a 25% premium to the stated value of the Series B Preferred Stock subject to redemption, upon 30 days prior written notice to the holder of the Series B Preferred Stock. The Series B Preferred Stock would be redeemed by us for cash.

Fundamental Transactions.

In the event of any fundamental transaction, generally including any merger with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer, or reclassification of our common stock, then upon any subsequent conversion of the Series B Preferred Stock, the holder will have the right to receive as alternative consideration, for each share of our common stock that would have been issuable upon such conversion immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of our common stock for which the Series B Preferred Stock is convertible immediately prior to such event.

Voting Rights.

With certain exceptions, the holders of shares of Series B Preferred Stock have no voting rights. However, as long as any shares of Series B Preferred Stock remain outstanding, we may not, without the affirmative vote of holders of a majority of the then-outstanding Series B Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend the Certificate of Designation, (b) increase the number of authorized shares of Series B Preferred Stock, (c) amend our Certificate of Incorporation or other charter documents in any manner that adversely affects any rights of holders of Series B Preferred Stock disproportionately to the rights of holders of our other capital stock, or (d) enter into any agreement with respect to any of the foregoing.

Jurisdiction and Waiver of Trial by Jury

Other than with respect to suits, actions or proceedings arising under the federal securities laws, the Certificate of Designation provides for investors to consent to exclusive jurisdiction to courts located in New York, New York and provides for a waiver of the right to a trial by jury. It also provides that disputes are governed by Delaware law.

Series C Preferred Stock.

Our board of directors designated 9,440 shares of our preferred stock as Series C Preferred Stock. As of December 31, 2022, there were 50 shares of Series C Preferred stock outstanding.

Conversion. Each share of Series C Preferred Stock is convertible at our option at any time or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the $1,000 stated value per share of the Preferred Stock by a conversion price of $150 per share. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Series C Preferred Stock will not have the right to convert any portion of the Series C Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion. A holder of the Series C Preferred Stock, upon notice to the Company, may increase or decrease the beneficial ownership limitation provisions of such holder's Series C Preferred Stock, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion. In the event that a conversion is effected at our option, we will exercise such option to convert shares of Series C Preferred Stock on a pro rata basis among all of the holders based on such holders' shares of Series C Preferred Stock.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Series C Preferred Stock, the holders of the Series C Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Series C Preferred Stock.

Dividends. Holders of Series C Preferred Stock shall be entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

Voting Rights. Except as otherwise provided in the certificate of designation or as otherwise required by law, the Series C Preferred Stock has no voting rights.

*Liquidation Preference***.** Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Series C Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, the same amount that a holder of common stock would receive if the Series C Preferred Stock were fully converted (disregarding for such purpose any conversion limitations under the certificate of designation) to common stock, which amounts shall be paid pari passu with all holders of common stock.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Series C Preferred Stock. Shares of Series C Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous provisions.

Series D Preferred Stock

Our board of directors designated 4,656 shares of our preferred stock as Series D Preferred Stock. As of December 31, 2022, there were 206 shares of Series D Preferred stock outstanding.

Conversion. Each share of Preferred Stock is convertible at the option of the holder at any time, into the number of shares of our common stock determined by dividing the $1,000 stated value per share of the Preferred Stock by a conversion price of $15.102 per share. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Preferred Stock will not have the right to convert any portion of the Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion. A holder of the Preferred Stock, upon notice to us, may increase or decrease the beneficial ownership limitation provisions of such holder's Preferred Stock, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share

exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Preferred Stock, the holders of the Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Preferred Stock.

Dividends. Holders of Preferred Stock shall be entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

Voting Rights. Except as otherwise provided in the certificate of designation or as otherwise required by law, the Preferred Stock has no voting rights.

Liquidation Preference. Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, the same amount that a holder of common stock would receive if the Preferred Stock were fully converted (disregarding for such purpose any conversion limitations under the certificate of designation) to common stock, which amounts shall be paid pari passu with all holders of common stock.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Preferred Stock. Shares of Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous provisions.

Warrants

As of December 31, 2022, there were 640,131 common stock purchase warrants outstanding, which expire between May 2023 and October 2027. Each of these warrants entitles the holder to purchase one share of common stock at prices ranging between $6,000 and $9.21 per share, with a weighted average exercise price of $191.86 per share. Certain of these warrants has a net exercise provision under which its holder may, in lieu of payment of the exercise price in cash, surrender the warrant and receive a net amount of shares based on the fair market value of our common stock at the time of exercise of the warrant after deduction of the aggregate exercise price. Each of these warrants also contains provisions for the adjustment of the exercise price and the aggregate number of shares issuable upon the exercise of the warrant in the event of dividends, share splits, reorganizations and reclassifications and consolidations. Certain of these warrants contain a provision requiring a reduction to the exercise price in the event we issue common stock, or securities convertible into or exercisable for common stock, at a price per share lower than the warrant exercise price.

The holders of certain of these warrants have registration rights, as described in greater detail below.

October 2022 Rights Offering Warrants

On October 17, 2022, we issued 308,321 common stock warrants designated as our "Class A" warrants and 308,321 common stock warrants designated as our "Class B" warrants (collectively the "October 2022 Warrants") in a rights offering to our stockholders (the "October 2022 Rights Offering"). Each of these warrants entitles the holder to purchase one share of common stock at an exercise price of $9.21 per share. The Class A Warrants and Class B Warrants have the same terms, except that the Class A Warrants expire five years from the date of issuance and the Class B Warrants expire three years from the date of issuance. The material terms and provisions of the October 2022 Warrants are summarized below. This summary of the October 2022 Warrants is not complete. For the complete terms of the October 2022 Warrants, you should refer to the form of October 2022 Warrant filed as an exhibit to the registration statement of which this prospectus forms a part.

Pursuant to a warrant agency agreement between us and American Stock Transfer & Trust Company, LLC, as warrant agent, the October 2022 Warrants were issued in book-entry form and are represented only by one or more global warrants deposited with the warrant agent, as custodian on behalf of The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC.

Exercisability

Each Class A Warrant is exercisable at any time and will expire five years from the date of issuance. Each Class B Warrant is exercisable at any time and will expire three years from the date of issuance. The Warrants are exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and payment in full for the number of shares of our common stock purchased upon such exercise, except in the case of a cashless exercise as discussed below. The number of shares of common stock issuable upon exercise of the Warrants is subject to adjustment in certain circumstances, including a stock split of, stock dividend on, or a subdivision, combination or recapitalization of the common stock. If we effect a merger, consolidation, sale of substantially all of our assets, or other similar transaction, then, upon any subsequent exercise of a Warrants, the Warrant holder will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon exercise in full of the Warrant.

Cashless Exercise

If at any time there is no effective registration statement registering, or the prospectus contained therein is not available for issuance of, the shares issuable upon exercise of the warrant, the holder may exercise the warrant on a cashless basis. When exercised on a cashless basis, a portion of the warrant is cancelled in payment of the purchase price payable in respect of the number of shares of our common stock purchasable upon such exercise.

Exercise Price

Each warrant represents the right to purchase one share of common stock at an exercise price equal to the Conversion Price. In addition, the exercise price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. The exercise price is also subject to adjustment in the event that we sell, issue, or grant any option to purchase, or sell or issue any right to reprice, or otherwise dispose of or issue (or enter into any agreement relating to the offer, sale, grant or any option to purchase or other disposition) any common stock or convertible securities (as defined in the warrants), at an effective price per share less than the exercise price then in effect. In addition, if at any time there occurs a stock dividend, distribution, subdivision, combination, or reclassification and the volume weighted average price of the shares of common stock for the five trading days following such event is less than the exercise price then in effect (after giving effect to the adjustment of the exercise price pursuant to such event under the terms of the Warrants), then on the fifth trading day following such event, the exercise price shall be reduced to the volume weighted average price of the shares of common stock for the five trading days following such event.

Subject to limited exceptions, a holder of warrants will not have the right to exercise any portion of the warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to us, may increase or decrease the beneficial ownership limitation provisions of the warrant, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the warrant.

Transferability

Subject to applicable laws and restrictions, a holder may transfer a warrant upon surrender of the warrant to us with a completed and signed assignment in the form attached to the warrant. The transferring holder will be responsible for any tax that liability that may arise as a result of the transfer.

No Market

There is no public trading market for the October 2022 Warrants and they will not be listed for trading on Nasdaq or any other securities exchange or market.

Rights as Stockholder

Except as set forth in the October 2022 Warrants, the holder of an October 2022 Warrant, solely in such holder's capacity as a holder of such warrant, will not be entitled to vote, to receive dividends, or to any of the other rights of our stockholders.

Amendments and Waivers

The provisions of each October 2022 Warrant may be modified or amended or the provisions thereof waived with the written consent of us and the holder.

The October 2022 Warrants were issued pursuant to a warrant agent agreement by and between us and America Stock Transfer & Trust Company, the warrant agent.

Maxim and Ascendiant October 2022 Warrants

In connection with the October 2022 Rights Offering, the Company issued (i) to Maxim, as the dealer-manager in the October 2022 Rights Offering, 10,483 warrants to purchase shares of the Company's common stock and (ii) to Ascendiant, as a financial advisor to the Company in the October 2022 Rights Offering, 1,850 warrants to purchase shares of the Company's common stock (collectively, the "Dealer Manager Warrants"). The Dealer Manager Warrants are non-exercisable for 6 months from October 17, 2022 and will expire on September 23, 2027. The Dealer Manager Warrants will be exercisable at a price of $16.61 per share, subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. Subject to limited exceptions, a holder of the Dealer Manager Warrants will not have the right to exercise any portion of the Dealer Manager Warrants to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of the Company's common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to the Company, may increase or decrease the beneficial ownership limitation provisions of the Dealer Manager Warrants, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the Dealer Manager Warrants. In addition, the Dealer Manager Warrants shall not be redeemable and may not be sold, transferred, assigned, pledged or hypothecated or be the subject of any hedging, short sale, derivative, put, or call transaction for a period of 180 days following September 23, 2022, except that they may be assigned, in whole or in part, to any officer or partner of Maxim (or to Ascendiant). The Dealer Manager Warrants may be exercised as to all or a lesser number of shares of the Company's common stock, and will contain unlimited "piggyback" registration rights for a period of five years after September 23, 2022, at the Company's expense. The Company relied on the exemption from registration available under Section 4(a)(2) of the Securities Act in connection with the issuance of the Dealer Manager Warrants to Maxim and Ascendiant.

The foregoing description of the Dealer Manager Warrants is not complete. For the complete terms of the Dealer Manager Warrants, you should refer to the form of Dealer Manager Warrant filed as an exhibit to the registration statement of which this prospectus forms a part.

February 2020 Rights Offering Warrants

On February 6, 2020, we issued 63,720 common stock warrants (the "February 2020 Warrants") in a rights offering to our stockholders. The material terms and provisions of the February 2020 Warrants are summarized below. This summary of the February 2020 Warrants is not complete. For the complete terms of the February 2020 Warrants, you should refer to the form of February 2020 Warrant filed as an exhibit to the registration statement of which this prospectus forms a part.

Pursuant to a warrant agency agreement between us and American Stock Transfer & Trust Company, LLC, as warrant agent, the February 2020 Warrants were issued in book-entry form and are represented only by one or more global warrants deposited with the warrant agent, as custodian on behalf of The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC.

Exercisability. Each February 2020 Warrant became exercisable at the time of issuance and will expire five years from their issuance date. The February 2020 Warrants are exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and payment in full for the number of shares of our common stock purchased upon such exercise, except in the case of a cashless exercise as discussed below. The number of shares of common stock issuable upon exercise of the February 2020 Warrants is subject to adjustment in certain circumstances, including a stock split of, stock dividend on, or a subdivision, combination or recapitalization of the common stock. If we effect a merger, consolidation, sale of substantially all of our assets, or other similar transaction, then, upon any subsequent exercise of a February 2020 Warrant, the February 2020 Warrant holder will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon exercise in full of the February 2020 Warrant.

Cashless Exercise. After the earlier of (a) the date that is 30 days after the initial exercise date of the February 2020 Warrants or (b) such trading day that the aggregate volume of shares of common stock sold since the expiration of the Offering exceeds three times the number of shares of common stock and common stock equivalents sold in the Offering, the holder shall be permitted to exercise the February 2020 Warrant, on a cashless basis, regardless of the then applicable trading price of the common stock on Nasdaq, for an aggregate number of shares of common stock equal to the product of (i) the aggregate number of shares of common stock that would be issuable upon exercise of the Warrant if such exercise were by means of a cash exercise and (ii) 0.70.

Additionally, if at any time there is no effective registration statement registering, or the prospectus contained therein is not available for issuance of, the shares issuable upon exercise of the warrant, the holder may exercise the warrant on a cashless basis, in which a portion of the warrant is cancelled in payment of the purchase price payable in respect of the number of shares of our common stock purchasable upon such exercise.

Exercise Price. Each February 2020 Warrant represents the right to purchase one share of common stock at an exercise price of $150 per share. In addition, the exercise price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. Subject to limited exceptions, a holder of warrants will not have the right to exercise any portion of the warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to the Company, may increase or decrease the beneficial ownership limitation provisions of the warrant, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the warrant.

Fundamental Transactions. In the event we consummate a merger or consolidation with or into another person or other reorganization event in which our shares of common stock are converted or exchanged for securities, cash or other property, or we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets or we or another person acquires 50% or more of our outstanding shares of common stock, referred to as a fundamental transaction, then following such event, the holders will have the option, which may be exercised within 30 days after the consummation of the fundamental transaction, to require the Company or the successor entity purchase the Warrant from the holder by paying to the holder an amount of cash equal to the Black Scholes value of the remaining unexercised portion of the warrant on the date

of the consummation of the fundamental transaction. However, if the fundamental transaction is not within the Company's control, including not approved by the Company's Board of Directors, the holder will only be entitled to receive from the Company or any successor entity, as of the date of consummation of such fundamental transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes value of the unexercised portion of the Warrant, that is being offered and paid to the holders of common stock of the Company in connection with the fundamental transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of common stock are given the choice to receive from among alternative forms of consideration in connection with the fundamental transaction.

Transferability. Subject to applicable laws and restrictions, a holder may transfer a warrant upon surrender of the warrant to us with a completed and signed assignment in the form attached to the warrant. The transferring holder will be responsible for any tax that liability that may arise as a result of the transfer.

No Market. There is no public trading market for the February 2020 Warrants, and they are not listed for trading on Nasdaq or any other securities exchange or market.

Rights as Stockholder. Except as set forth in the February 2020 Warrants, the holder of a warrant, solely in such holder's capacity as a holder of a February 2020 Warrant, will not be entitled to vote, to receive dividends, or to any of the other rights of our stockholders.

Redemption Rights. We may redeem the warrants for $0.01 per warrant if our common stock closes above $8.00 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of expiration of the Rights Offering.

Amendments and Waivers. The provisions of each February 2020 Warrant may be modified or amended or the provisions thereof waived with the written consent of us and the holder.

Maxim and Ascendiant February 2020 Warrants

Also on February 6, 2020, in connection with a rights offering, we issued 2,039 common stock warrants (the "Maxim Warrants") to Maxim, as the dealer manager in such rights offering, and 510 common stock warrants (the "Ascendiant Warrants") to Ascendiant, as a financial advisor to us in such rights offering. The Maxim Warrants and Ascendiant Warrants have the same material terms as the February 2020 Warrants, except as described below.

The Maxim Warrants and Ascendiant Warrants became exercisable 6 months from February 6, 2020 and will expire on January 17, 2025. The Maxim Warrants and Ascendiant Warrants are exercisable at a price of $162.95 per share, subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. Subject to limited exceptions, a holder of the Maxim Warrants and Ascendiant Warrants will not have the right to exercise any portion of such warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to us, may increase or decrease the beneficial ownership limitation provisions of the warrant, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the warrant.

The Maxim Warrants and Ascendiant Warrants contain the same provisions regarding fundamental transactions as those contained in the February 2020 Warrants, except that the Maxim Warrants and Ascendiant Warrants do not provide the holders thereof with the option to require us, or a successor entity, to pay an amount equal to the Black Scholes value of the warrants in the event of certain fundamental transactions.

The Maxim Warrants and Ascendiant Warrants are not redeemable. The Maxim Warrants and Ascendiant Warrants contain unlimited "piggyback" registration rights for a period of five years after February 6, 2020 (but not longer than 7 years from January 17, 2020) at our expense, subject to certain exceptions. We relied on the exemption from registration available under Section 4(a)(2) of the Securities Act in connection with the issuance of the warrants to Maxim and Ascendiant.

This summary of the Maxim Warrants and Ascendiant Warrants is not complete. For the complete terms of the Maxim Warrants and Ascendiant Warrants, you should refer to the form of Maxim Warrants and Ascendiant Warrants filed as an exhibit to the registration statement of which this prospectus forms a part.

May 2018 Public Offering Warrants

On May 14, 2018, we issued 3,790 common stock warrants (the "May 2018 Warrants") in a public offering. The material terms and provisions of the May 2018 Warrants are summarized below. This summary of the May 2018 Warrants is not complete. For the complete terms of the May 2018 Warrants, you should refer to the form of May 2018 Warrant filed as an exhibit to the registration statement of which this prospectus forms a part.

Pursuant to a warrant agency agreement between us and American Stock Transfer & Trust Company, LLC, as warrant agent, the May 2018 Warrants were issued in book-entry form and are represented only by one or more global warrants deposited with the warrant agent, as custodian on behalf of The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC.

Exercisability, Exercise Price and Term. The May 2018 Warrants entitle the holder to purchase shares of our common stock at an exercise price equal to $9.21 per share. The May 2018 Warrants were exercisable immediately and expire on the five-year anniversary of the issuance date. The holder of a May 2018 Warrant will not be deemed a holder of our underlying common stock until the May 2018 Warrant is exercised, except as set forth in the May 2018 Warrants.

The exercise price and the number of shares issuable upon exercise of the May 2018 Warrants is subject to appropriate adjustment, similar to that described with respect to the Series B Preferred Stock above, in the event of recapitalization events, stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our common stock. Subject to certain exclusions contained in the May 2018 Warrant, the exercise price is also subject to adjustment in the event that we sell or grant any option to purchase, or sell or grant any right to reprice, or otherwise dispose of or issue (or announce any offer, sale, grant or any option to purchase or other disposition) any common stock or common stock equivalents (as defined in the May 2018 Warrants), at an effective price per share less than the exercise price then in effect (including in the event we issued Series B Preferred Stock at a conversion price lower than the initial conversion price of the Series B Preferred Stock). In addition, May 2018 Warrant holders may be eligible to elect an alternative price in the event we issue certain variable price securities. The May 2018 Warrant holders must pay the exercise price in cash upon exercise of the May 2018 Warrants, unless such May 2018 Warrant holders are utilizing the cashless exercise provision of the May 2018 Warrants, which is only available in certain circumstances such as if the underlying shares are not registered with the SEC pursuant to an effective registration statement.

Fundamental Transactions. In addition, in the event we consummate a merger or consolidation with or into another person or other reorganization event in which our shares of common stock are converted or exchanged for securities, cash or other property, or we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets or we or another person acquires 50% or more of our outstanding shares of common stock, referred to as a fundamental transaction, then following such event, the holders of the May 2018 Warrants will be entitled to receive upon exercise of the May 2018 Warrants the same kind and amount of securities, cash or property which the holders would have received had they exercised the May 2018 Warrants immediately prior to such fundamental transaction. Any successor to us or surviving entity is required to assume the obligations under the warrants. Notwithstanding the foregoing, in the event of a fundamental transaction, the holders will have the option, which may be exercised within 30 days after the consummation of the fundamental transaction, to require us or the successor entity purchase the Warrant from the holder by paying to the holder an amount of cash equal to the Black Scholes value of the remaining unexercised portion of the warrant on the date of the consummation of the fundamental transaction. However,

if the fundamental transaction is not within our control, including not approved by our Board of Directors, the holder will only be entitled to receive from us or any successor entity, as of the date of consummation of such fundamental transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes value of the unexercised portion of the May 2018 Warrant, that is being offered and paid to the holders of our common stock in connection with the fundamental transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of common stock are given the choice to receive from among alternative forms of consideration in connection with the fundamental transaction.

Upon the holder's exercise of a May 2018 Warrant, we will issue the shares of common stock issuable upon exercise of the May 2018 Warrant within two trading days following our receipt of a notice of exercise, provided that payment of the exercise price has been made (unless exercised via the "cashless" exercise provision).

Prior to the exercise of any May 2018 Warrants to purchase common stock, holders of the May 2018 Warrants will not have any of the rights of holders of the common stock purchasable upon exercise, including the right to vote, except as set forth therein.

May 2018 Warrant holders may exercise the May 2018 Warrants only if the issuance of the shares of common stock upon exercise of the May 2018 Warrants is covered by an effective registration statement, or an exemption from registration is available under the Securities Act and the securities laws of the state in which the holder resides. The May 2018 Warrant holders must pay the exercise price in cash upon exercise of the May 2018 Warrants unless there is not an effective registration statement or, if required, there is not an effective state law registration or exemption covering the issuance of the shares underlying the May 2018 Warrants (in which case, the May 2018 Warrants may only be exercised via a "cashless" exercise provision).

Beneficial Ownership Limitation. The May 2018 Warrant provides that we may not effect any exercise of the May 2018 Warrants, with certain exceptions, to the extent that, after giving effect to an attempted exercise, the holder (together with such holder's affiliates, and any persons acting as a group together with such holder or any of such holder's affiliates) would beneficially own a number of shares of common stock in excess of 4.99% (or, at the election of the holder, 9.99%) of the shares of our common stock then outstanding after giving effect to such exercise, referred to as the May 2018 Warrant Beneficial Ownership Limitation; provided, however, that upon notice to us, the holder may increase or decrease the May 2018 Warrant Beneficial Ownership Limitation, provided that in no event may the May 2018 Warrant Beneficial Ownership Limitation exceed 9.99% and any increase in the May 2018 Warrant Beneficial Ownership Limitation will not be effective until 61 days following notice of such increase from the holder to us.

Cashless Exercise. If a May 2018 Warrant is exercised via the "cashless" exercise provision, the holder will receive the number of shares equal to the quotient obtained by dividing (i) the difference between the VWAP (as determined pursuant to the terms of the May 2018 Warrants) and the exercise price of the May 2018 Warrant multiplied by the number of shares issuable under the May 2018 Warrant if such exercise were by means of a cash exercise by (ii) the VWAP (as determined pursuant to the terms of the May 2018 Warrants).

Jurisdiction and Waiver of Trial by Jury. Other than with respect to suits, actions or proceedings arising under the federal securities laws, the May 2018 Warrant provides for investors to consent to exclusive jurisdiction to courts located in New York, New York and provides for a waiver of the right to a trial by jury. It also provides that disputes are governed by New York law.

Repricing of Series E Warrants and Issuance of New Warrants

On March 6, 2018, we entered into a Warrant Amendment Agreement (the "Amendment Agreement") with the holders of previously issued Series E Common Stock Purchase Warrants (collectively, the "Series E Investors").

In connection with that certain Series E Common Stock Purchase Warrant between us and Series E Investors dated July 8, 2016, (the "Series E Warrant Agreement") we issued to the Series E Investors warrants to purchase up to 339 shares of common stock (the "Warrant Shares") at an exercise price of $36,000 per share, (the "Series E Investor Warrants"). Under the terms of the Amendment Agreement, in consideration of the Series E Investors exercising 271 of the Series E Investor Warrants (the "Series E Warrant Exercise"), the exercise price per share of the Series E Investor Warrants was reduced to $6,000 per share. In addition, and as further consideration, we issued to the Series E Investors warrants to purchase up to the number of shares of common stock equal to 100% of the number of Series E Warrant Shares issued pursuant to the Series E Warrant Exercise at an exercise price per share equal to $6,000 per share, the closing bid price for our common stock on March 5, 2018 (the "New Warrants"). The Series E Investors may exercise the remaining 339 Series E Investor Warrants at their discretion. The Amendment Agreement incorporated portions of the Series E Warrant Agreement, which contained customary representations, warranties and covenants by each of us and the Series E Investors.

The New Warrants are exercisable for up to five years from the Effective Date. The exercise price and number of shares issuable upon exercise of the New Warrants are subject to adjustment for stock splits, combinations, recapitalization events and certain dilutive issuances. The New Warrants are required to be exercised for cash, provided that if during the term of the New Warrants there is not an effective registration statement under the Securities Act covering the resale of the shares issuable upon exercise of the New Warrants, then the New Warrants may be exercised on a cashless (net exercise) basis. The New Warrant is attached as an exhibit to the registration statement of which this prospectus forms a part and is incorporated herein by reference.

Future Preferred Stock.

Our board of directors will fix the rights, preferences, privileges, qualifications and restrictions of the preferred stock of each series that we sell under this prospectus and applicable prospectus supplements in the certificate of designation relating to that series. We will file as an exhibit to the registration statement of which this prospectus is a part, or incorporate by reference into the registration statement of which this prospectus is a part the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. This description will include:

- the title and stated value;
- the number of shares we are offering;
- the liquidation preference per share;
- the purchase price per share;
- the dividend rate per share, dividend period and payment dates and method of calculation for dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- our right, if any, to defer payment of dividends and the maximum length of any such deferral period;
- the procedures for any auction and remarketing, if any;

- the provisions for a sinking fund, if any;
- the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;
- any listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock or other securities of ours, including warrants, and, if applicable, the conversion period, the conversion price, or how it will be calculated, and under what circumstances it may be adjusted;
- voting rights, if any, of the preferred stock;
- preemption rights, if any;
- restrictions on transfer, sale or other assignment, if any;
- a discussion of any material or special United States federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;
- any limitations on issuances of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock being issued as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and
- any other specific terms, rights, preferences, privileges, qualifications or restrictions of the preferred stock.

When we issue shares of preferred stock under this prospectus, the shares will be fully paid and nonassessable and will not have, or be subject to, any preemptive or similar rights.

The General Corporation Law of the State of Delaware, the state of our incorporation, provides that the holders of preferred stock will have the right to vote separately as a class on any proposal involving fundamental changes in the rights of holders of that preferred stock. This right is in addition to any voting rights that may be provided for in the applicable certificate of designation.

Effects of Anti-Takeover Provisions of Our Restated Certificate of Incorporation, Our Restated Bylaws and Delaware Law

The provisions of (1) Delaware law, (2) our Restated Certificate of Incorporation and (3) our Restated Bylaws discussed below could discourage or make it more difficult to prevail in a proxy contest or effect other change in our management or the acquisition of control by a holder of a substantial amount of our voting stock. It is possible that these provisions could make it more difficult to accomplish, or could deter, transactions that stockholders may otherwise consider to be in their best interests or our best interests. These provisions are intended to enhance the likelihood of continuity and stability in the composition of our board of directors and in the policies formulated by the board of directors and to discourage certain types of transactions that may involve an actual or threatened change in control of our company. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. These provisions also are intended to discourage certain tactics that may be used in proxy fights. These provisions also may have the effect of preventing changes in our management.

Delaware Statutory Business Combinations Provision. We are subject to the anti-takeover provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. For purposes of Section 203, a "business combination" is defined broadly to include a merger, asset sale or other transaction resulting in a financial benefit to the interested stockholder, and, subject to certain exceptions, an "interested stockholder" is a person who, together with his or her affiliates and associates, owns (or within three years prior, did own) 15% or more of the corporation's voting stock.

*Classified Board of Directors; Appointment of Directors to Fill Vacancies; Removal of Directors for Cause.*Our Restated Certificate of Incorporation provides that our board of directors will be divided into three classes as nearly equal in number as possible. Each year the stockholders will elect the members of one of the three classes to a three-year term of office. All directors elected to our classified board of directors will serve until the election and qualification of their respective successors or their earlier resignation or removal. The board of directors is authorized to create new directorships and to fill any positions so created and is permitted to specify the class to which any new position is assigned. The person filling any of these positions would serve for the term applicable to that class. The board of directors (or its remaining members, even if less than a quorum) is also empowered to fill vacancies on the board of directors occurring for any reason for the remainder of the term of the class of directors in which the vacancy occurred. Members of the board of directors may only be removed for cause and only by the affirmative vote of holders of at least 80% of our outstanding voting stock. These provisions are likely to increase the time required for stockholders to change the composition of the board of directors. For example, in general, at least two annual meetings will be necessary for stockholders to effect a change in a majority of the members of the board of directors.

*Authorization of Blank Check Preferred Stock.*Our Restated Certificate of Incorporation provides that our board of directors is authorized to issue, without stockholder approval, blank check preferred stock. Blank check preferred stock can operate as a defensive measure known as a "poison pill" by diluting the stock ownership of a potential hostile acquirer to prevent an acquisition that is not approved by our board of directors.

Advance Notice Provisions for Stockholder Proposals and Stockholder Nominations of Directors. Our Restated Bylaws provide that, for nominations to the board of directors or for other business to be properly brought by a stockholder before a meeting of stockholders, the stockholder must first have given timely notice of the proposal in writing to our Secretary. For an annual meeting, a stockholder's notice generally must be delivered not less than 90 days nor more than 120 days prior to the anniversary of the mailing date of the proxy statement for the previous year's annual meeting. For a special meeting, the notice must generally be delivered no less than 60 days nor more than 90 days prior to the special meeting or ten days following the day on which public announcement of the meeting is first made. Detailed requirements as to the form of the notice and information required in the notice are specified in our Restated Bylaws. If it is determined that business was not properly brought before a meeting in accordance with our bylaw provisions, this business will not be conducted at the meeting.

Special Meetings of Stockholders. Special meetings of the stockholders may be called only by our board of directors pursuant to a resolution adopted by a majority of the total number of directors.

No Stockholder Action by Written Consent. Our Restated Certificate of Incorporation does not permit our stockholders to act by written consent. As a result, any action to be effected by our stockholders must be effected at a duly called annual or special meeting of the stockholders.

Super-Majority Stockholder Vote required for Certain Actions. The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws, unless the corporation's certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our Restated Certificate of Incorporation requires the affirmative vote of the holders of at least 80% of our outstanding voting stock to amend or repeal any of the provisions discussed in this section of this prospectus entitled "Effect of Anti-Takeover Provisions of Our Restated Certificate of Incorporation, Our Restated Bylaws and Delaware Law" or to reduce the number of authorized shares of common stock or preferred stock. This 80% stockholder vote would be in addition to any separate class vote that might in the future be required pursuant to the terms of any preferred stock that might then be outstanding. An 80% vote is also required for any amendment to, or repeal of, our Restated Bylaws by the stockholders. Our Restated Bylaws may be amended or repealed by a simple majority vote of the board of directors.

Potential Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock.

The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management. In addition, the board of directors has the discretion to determine designations, rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences of each series of preferred stock, all to the fullest extent permissible under the Delaware General Corporation Law and subject to any limitations set forth in our certificate of incorporation. The purpose of authorizing the board of directors to issue preferred stock and to determine the rights and preferences applicable to such preferred stock is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing desirable flexibility in connection with possible financings, acquisitions and other corporate purposes, could have the effect of making it more difficult for a third-party to acquire, or could discourage a third-party from acquiring, a majority of our outstanding voting stock.

Transfer Agent and Warrant Agent

The transfer agent and registrar for our common stock and the warrant agent for the Warrants and pre-funded warrants is American Stock Transfer & Trust Company, LLC. The transfer agent and the registrar's address is 59 Maiden Lane, New York, New York 10038.

PLAN OF DISTRIBUTION

We are offering up to 2,150,000 Units, at a public offering price of $5.60 per Unit, for gross proceeds of approximately $12 million before deduction of placement agent commissions and offering expenses, in a best-efforts offering. There is no minimum amount of proceeds that is a condition to closing of this offering. The actual amount of gross proceeds, if any, in this offering could vary substantially from the gross proceeds from the sale of the maximum amount of securities being offered in this prospectus.

Pursuant to a placement agency agreement, dated as of February 7, 2023, we have engaged Maxim Group LLC to act as our exclusive placement agent (the "Placement Agent") to solicit offers to purchase the securities offered by this prospectus. The Placement Agent is not purchasing or selling any securities, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of securities, other than to use its "reasonable best efforts" to arrange for the sale of the securities by us. Therefore, we may not sell the entire amount of securities being offered. Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. In addition to the rights and remedies available to all investors in this offering under federal and state securities laws, the investors which enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. Investors who do not enter into a securities purchase agreement shall rely solely on this prospectus in connection with the purchase of our securities in this offering. The Placement Agent may engage one or more subagents or selected dealers in connection with this offering.

The placement agency agreement provides that the Placement Agent's obligations are subject to conditions contained in the placement agency agreement.

We will deliver the securities being issued to the investors upon receipt of investor funds for the purchase of the securities offered pursuant to this prospectus. There is no arrangement for funds to be received in escrow, trust or similar arrangement and the Units will be offered at a fixed price and are expected to be issued in a single closing. We expect to deliver the securities being offered pursuant to this prospectus on or about February 10, 2023.

Placement Agent Fees, Commissions and Expenses

Upon the closing of this offering, we will pay the placement agent a cash transaction fee equal to 7% of the aggregate gross cash proceeds to us from the sale of the securities in the offering. In addition, we will reimburse the placement agent for its out-of-pocket expenses incurred in connection with this offering, including the fees and expenses of the counsel for the placement agent, up to $100,000.

The following table shows the public offering price, placement agent fees and proceeds, before expenses, to us.

	Per Unit Including Common Stock	Per Unit Include Pre-Funded Warrant	Total
Public offering price	$ 5.60	$ 5.5999	$ 12,039,983
Placement Agent fees	$ 0.392	$ 0.3920	$ 842,799
Proceeds, before expenses, to us	$ 5.208	$ 5.2079	$ 11,197,184

We estimate that the total expenses of the offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding the placement agent commission, will be approximately $316,600, all of which are payable by us. This figure includes, among other things, the placement agent's fees and expenses (including the legal fees, costs and expenses for the placement agent's legal counsel) up to $100,000.

Placement Agent Warrants

Additionally, we agreed to grant to the placement agent common stock purchase warrants exercisable for a number of shares of our common stock equal to 4% of the Units sold in the offering. In the event that we engage Ascendiant Capital Markets, LLC as a financial advisor in connection with the offering, the placement agent agreed that Ascendiant shall be entitled to 15% of the total fee earned by the placement agent in connection with the offering and 15% of the placement agent warrants issuable upon closing (i.e., the placement agent will receive 85% of the cash fee and placement agent warrants, and Ascendiant shall receive 15% of the cash fee and placement agent warrants). The placement agent warrants will be non-exercisable for six (6) months after the date of the closing and will expire five years after the commencement of sales of the offering. The placement agent warrants will be exercisable at a price equal to 110.0% of the public offering price of the Units. The placement agent warrants shall not be redeemable. The placement agent may not be sold, transferred, assigned, pledged or hypothecated or be the subject of any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of the securities for a period of 180 days beginning on the date of the commencement of sales of the offering, except that they may be assigned, in whole or in part, to any officer or partner, registered person or affiliate of the placement agent (or to Ascendiant) subject to the terms of the lock-up. The placement agent

warrants may be exercised as to all or a lesser number of shares of our common stock. The placement agent warrants will contain demand registration rights at the holder's expense until the expiration of the placement agent warrants and unlimited "piggyback" registration rights for a period of five years after the commencement of sales of the offering at our expense.

Lock-Up Agreements

We, each of our officers and directors and stockholders holding five percent or more of our shares of Common Stock have agreed, subject to certain exceptions, not to offer, issue, sell, contract to sell, encumber, grant any option for the sale of or otherwise dispose of any shares of our Common Stock or other securities convertible into or exercisable or exchangeable for our Common Stock for a period of six months after this offering is completed without the prior written consent of the placement agent.

The placement agent may in its sole discretion and at any time without notice release some or all of the shares subject to lock-up agreements prior to the expiration of the lock-up period. When determining whether or not to release shares from the lock-up agreements, the placement agent will consider, among other factors, the security holder's reasons for requesting the release, the number of shares for which the release is being requested and market conditions at the time.

Right of First Refusal

Upon the closing of this offering for gross proceeds of at least six million dollars ($6,000,000), for a period of nine (9) months following the closing, we will grant the placement agent the right of first refusal to act as sole managing underwriter and sole book runner, sole placement agent, or sole sales agent, for any and all future public or private equity, equity-linked or debt (excluding commercial bank debt) offerings for which we retain the service of an underwriter, agent, advisor, finder or other person or entity in connection with such offering by us, or any successor to us or any subsidiary of ours, during such nine (9) month period. We will not offer to retain any entity or person in connection with any such offering on terms more favorable than terms on which we offer to retain the placement agent. Notwithstanding anything herein to the contrary, this right of first refusal shall not apply to self-directed offerings in which we do not employ the services of an investment banker, finder or financial advisor to which we pay commissions.

Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the placement agent may be required to make for these liabilities.

Regulation M

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent acting as principal. Under these rules and regulations, the placement agent (i) may not engage in any stabilization activity in connection with our securities and (ii) may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Determination of Offering Price and Warrant Exercise Price

The actual offering price of the securities we are offering, and the exercise price of the Warrants included in the Units that we are offering, were negotiated between us, the placement agent and the investors in the offering based on the trading of our shares of Common Stock prior to the offering, among other things. Other factors considered in determining the public offering price of the securities we are offering, as well as the exercise price of the Warrants that we are offering include our history and prospects, the stage of development of our business, our business plans for the future and the extent to which they have been implemented, an assessment of our management, the general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

Electronic Distribution

A prospectus in electronic format may be made available on a website maintained by the placement agent. In connection with the offering, the placement agent or selected dealers may distribute prospectuses electronically. No forms of electronic prospectus other than prospectuses that are printable as Adobe® PDF will be used in connection with this offering.

Other than the prospectus in electronic format, the information on the placement agent's website and any information contained in any other website maintained by the placement agent is not part of the prospectus or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or the placement agent in its capacity as placement agent and should not be relied upon by investors.

Certain Relationships

The placement agent and its affiliates have provided and may in the future provide, from time to time, investment banking and financial advisory services to us in the ordinary course of business, for which they may receive customary fees and commissions.

In connection with a rights offering in October 2022, we entered into a dealer-manager agreement with the placement agent, and on the closing of such offering on October 17, 2022, we paid the placement agent a fee of 7% of the gross proceeds we received in the rights offering, as well as certain expenses, and issued to the placement agent warrants to purchase 10,483 shares of our common stock and to Ascendiant warrants to purchase 1,850 shares of our common stock.

On February 25, 2021, we entered into an equity distribution agreement with the placement agent (the "Equity Distribution Agreement"), pursuant to which we may sell shares of our Common Stock having an aggregate offering price of up to $15,000,000 from time to time through the placement agent. The placement agent will be entitled to a transaction fee at a fixed rate of 2.0% of the gross sales price of shares of common stock sold under the Equity Distribution Agreement. As of the date hereof, no shares of our common stock have been sold under the Equity Distribution Agreement.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock isAmerican Stock Transfer & Trust Company, LLC, whose address is 59 Maiden Lane, New York, New York 10038. Their telephone number is 1-800-937-5449.

Listing

Our common stock is traded on Nasdaq under the symbol "SINT."

Selling Restrictions

Canada. The securities may be sold in Canada only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31 103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33 105 *Underwriting Conflicts* (NI 33 105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriters conflicts of interest in connection with this offering.

European Economic Area. In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any securities may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any securities may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of securities shall result in a requirement for the publication by us or any underwriters of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any securities to be offered so as to enable an investor to decide to purchase any securities, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

Israel. This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968, or the Securities Law, and has not been filed with or approved by the Israel Securities Authority. In the State of Israel, this document is being distributed only to, and is directed only at, and any offer of the shares is directed only at, investors listed in the first addendum, or the Addendum, to the Israeli Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and "qualified individuals", each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors will be required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

United Kingdom. Each underwriter has represented and agreed that:

- it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (the FSMA) received by it in connection with the issue or sale of the securities in circumstances in which Section 21(1) of the FSMA does not apply to us; and
- it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the securities in, from or otherwise involving the United Kingdom.

Switzerland. The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (the SIX) or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the securities or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). Accordingly, no public distribution, offering or advertising, as defined in CISA, its implementing ordinances and notices, and no distribution to any non-qualified investor, as defined in CISA, its implementing ordinances and notices, shall be undertaken in or from Switzerland, and the investor protection afforded to acquirers of interests in collective investment schemes under CISA does not extend to acquirers of securities.

Australia. No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission (ASIC), in relation to the offering.

This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001 (the Corporations Act) and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the securities may only be made to persons (the Exempt Investors) who are "sophisticated investors" (within the meaning of section 708(8) of the Corporations Act), "professional investors" (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the securities without disclosure to investors under Chapter 6D of the Corporations Act.

The securities applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring securities must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Notice to Prospective Investors in the Cayman Islands. No invitation, whether directly or indirectly, may be made to the public in the Cayman Islands to subscribe for our securities.

Taiwan. The securities have not been and will not be registered with the Financial Supervisory Commission of Taiwan pursuant to relevant securities laws and regulations and may not be sold, issued or offered within Taiwan through a public offering or in circumstances which constitutes an offer within the meaning of the Securities and Exchange Act of Taiwan that requires a registration or approval of the Financial Supervisory Commission of Taiwan. No person or entity in Taiwan has been authorized to offer, sell, give advice regarding or otherwise intermediate the offering and sale of the securities in Taiwan.

Notice to Prospective Investors in Hong Kong. The contents of this prospectus have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the offer. If you are in any doubt about any of the contents of this prospectus, you should obtain independent professional advice. Please note that (i) our shares may not be offered or sold in Hong Kong, by means of this prospectus or any document other than to "professional investors" within the meaning of Part I of Schedule 1 of the Securities and Futures Ordinance (Cap.571, Laws of Hong Kong) (SFO) and any rules made thereunder, or in other circumstances which do not result in the document being a "prospectus" within the meaning of the Companies Ordinance (Cap.32, Laws of Hong Kong) (CO) or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO, and (ii) no advertisement, invitation or document relating to our shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere) which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the SFO and any rules made thereunder.

Notice to Prospective Investors in the People's Republic of China. This prospectus may not be circulated or distributed in the PRC and the shares may not be offered or sold, and will not offer or sell to any person for re-offering or resale directly or indirectly to any resident of the PRC except pursuant to applicable laws, rules and regulations of the PRC. For the purpose of this paragraph only, the PRC does not include Taiwan and the special administrative regions of Hong Kong and Macau.

CERTAIN MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following is a general discussion of certain material U.S. federal income tax considerations relating to the acquisition, ownership and disposition of Units, consisting of shares of common stock and Warrants, the acquisition, ownership and disposition of units consisting of pre-funded warrants and Warrants (such units are referred to in this discussion as "pre-funded units"), the acquisition, ownership, and disposition of shares of common stock acquired as part of the Units, the acquisition, ownership, and disposition of pre-funded warrants acquired as part of the pre-funded units, the exercise, disposition, or expiration of Warrants acquired as part of the Units or pre-funded units, the acquisition, ownership, and disposition of shares of common stock received upon exercise of the pre-funded warrants, and the acquisition, ownership, and disposition of shares of common stock received upon exercise of the Warrants (the "warrant shares"), all as acquired pursuant to this prospectus. This discussion is based on current provisions of the Internal Revenue Code of 1986, as amended (the "Internal Revenue Code"), existing and proposed U.S. Treasury Regulations promulgated or proposed thereunder and current administrative and judicial interpretations thereof, all as in effect as of the date of this prospectus and all of which are subject to change or to differing interpretation, possibly with retroactive effect. This summary does not discuss the potential effects, whether adverse or beneficial, of any proposed legislation that, if enacted, could be applied on a retroactive or prospective basis. We have not sought and will not seek any rulings from the Internal Revenue Service (the "IRS"), regarding the matters discussed below. There can be no assurance that the IRS or a court will not take a contrary position.

This discussion is limited to U.S. holders and non-U.S. holders who hold Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants, or warrant shares, as applicable, as a capital asset within the meaning of Section 1221 of the Internal Revenue Code (generally, as property held for investment). This discussion does not address all aspects of U.S. federal income taxation, such as the U.S. alternative minimum income tax and the additional tax on net investment income, nor does it address any aspect of state, local or non-U.S. taxes, or U.S. federal taxes other than income taxes, such as federal estate and gift taxes. Except as provided below, this summary does not address tax reporting requirements. This discussion does not consider any specific facts or circumstances that may apply to a holder and does not address the special tax considerations that may be applicable to particular holders, such as:

- insurance companies;
- tax-exempt organizations and governmental organizations;
- banks or other financial institutions;
- brokers or dealers in securities or foreign currency;
- traders in securities who elect to apply a mark-to-market method of accounting;
- real estate investment trusts, regulated investment companies or mutual funds;
- pension plans;
- controlled foreign corporations;
- passive foreign investment companies;
- corporations organized outside the United States, any state thereof, or the District of Columbia that are nonetheless treated as U.S. persons for U.S. federal income tax purposes;
- persons that own (directly, indirectly or constructively) more than 5% of the total voting power or total value of our common stock;
- corporations that accumulate earnings to avoid U.S. federal income tax;
- persons subject to the alternative minimum tax;
- U.S. expatriates and certain former citizens or long-term residents of the United States;

- persons that have a "functional currency" other than the U.S. dollar;
- persons that acquire Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares as compensation for services;
- owners that hold our stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- holders subject to special accounting rules;
- S corporations (and shareholders thereof);
- partnerships or other entities treated as partnerships for U.S. federal income tax purposes (and partners or other owners thereof); and
- U.S. holders that are subject to taxing jurisdictions other than, or in addition to, the United States with respect to their Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares, or that hold such securities in connection with a trade or business, permanent establishment or fixed base outside the United States.

If an entity or arrangement taxable as a partnership (or other "pass-through entity) for U.S. federal income tax purposes holds our Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares, the U.S. federal income tax treatment of such entity (or arrangement) and the partners (or other owners) of such entity generally will depend on the status of the partners, the activities of the entity and certain determinations made at the partner level. This summary does not address the tax consequences to any such owner. Partners (or other owners) of entities or arrangements that are classified as partnerships or as "pass-through" entities for U.S. federal income tax purposes should consult their own tax advisors regarding the U.S. federal, U.S. federal net investment income, U.S. federal alternative minimum, U.S. federal estate and gift, U.S. state and local, and non-U.S. tax consequences arising from and relating to the acquisition, ownership, and disposition our Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares.

For purposes of this discussion, the term "U.S. holder" means a beneficial owner of our Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares that is, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if (1) a U.S. court is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have authority to control all substantial decisions of the trust or (2) the trust has a valid election to be treated as a U.S. person under applicable U.S. Treasury Regulations.

A "non-U.S. holder" is a beneficial owner of our Units, pre-funded units, shares of common stock, pre-funded warrants, Warrants or warrant shares that is neither a U.S. holder nor a partnership (or other entity treated as a partnership for U.S. federal income tax purposes).

THIS DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT, AND IS NOT INTENDED TO BE, LEGAL OR TAX ADVICE. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE, LOCAL, AND NON-U.S. INCOME, ESTATE AND OTHER TAX CONSIDERATIONS OF ACQUIRING, HOLDING AND DISPOSING OF OUR UNITS, PRE-FUNDED UNITS, SHARES OF COMMON STOCK, PRE-FUNDED WARRANTS, WARRANTS OR WARRANT SHARES.

U.S. Federal Income Tax Consequences of the Acquisition of Units or Pre-Funded Units

For U.S. federal income tax purposes, the acquisition by a U.S. holder or a non-U.S. holder of a Unit will be treated as the acquisition of one share of common stock, one Class C Warrant and one-half of one Class D Warrant. The purchase price for each Unit will be allocated among these three components in proportion to their relative fair market values at the time the Unit is purchased by the U.S. holder or non-U.S. holder. This allocation of the purchase price for each Unit will establish a U.S. holder's or non-U.S. holder's initial tax basis for U.S. federal income tax purposes in the one share of common stock, one Class C Warrant, and the one-half of one Class D Warrant that comprise each Unit.

For this purpose, we will allocate $2.49 of the purchase price for the Unit to the share of common stock, $1.99 of the purchase price for the Unit to the Class C Warrant, and $1.12 of the purchase price for each Unit to the one-half of one Class D Warrant. However, the IRS will not be bound by such allocation of the purchase price for the Units, and therefore, the IRS or a U.S. court may not respect the allocation set forth above. Each U.S. holder and non-U.S. holder should consult its own tax advisor regarding the allocation of the purchase price for the Units.

For U.S. federal income tax purposes, the acquisition by a U.S. holder or a non-U.S. holder of a pre-funded unit will be treated as the acquisition of one pre-funded warrant, one Class C Warrant and one-half of one Class D Warrant. The purchase price for each pre-funded unit will be allocated among these three components in proportion to their relative fair market values at the time the pre-funded unit is purchased by the U.S. holder or non-U.S. holder. This allocation of the purchase price for each pre-funded unit will establish a U.S. holder's or non-U.S. holder's initial tax basis for U.S. federal income tax purposes in the one pre-funded warrant, one Class C Warrant, and one-half of one Class D Warrant that comprise each pre-funded unit.

For this purpose, we will allocate $2.49 of the purchase price for the pre-funded unit to the pre-funded warrant, $1.99 of the purchase price for each pre-funded unit to the Class C Warrant, and $1.12 of the purchase price for each Unit to the one-half of one Class D Warrant. However, the IRS will not be bound by such allocation of the purchase price for the pre-funded units, and therefore, the IRS or a U.S. court may not respect the allocation set forth above. Each U.S. holder and non-U.S. holder should consult its own tax advisor regarding the allocation of the purchase price for the pre-funded units.

Treatment of Pre-Funded Warrants

Although it is not entirely free from doubt, we believe that a pre-funded warrant should be treated as a separate class of common shares for U.S. federal income tax purposes and a U.S. holder or non-U.S. holder of pre-funded warrants should generally be taxed in the same manner as a holder of shares of common stock except as described below. Accordingly, no gain or loss should be recognized upon the exercise of a pre-funded warrant and, upon exercise, the holding period of a pre-funded warrant should carry over to the shares of common stock received. Similarly, the tax basis of the pre-funded warrant should carry over to the shares of common stock received upon exercise, increased by the exercise price of $0.0001 per share. However, such characterization is not binding on the IRS, and the IRS may treat the pre-funded warrants as warrants to acquire shares of common stock. If so, the amount and character of a U.S. holder's or non-U.S. holder's gain with respect to an investment in pre-funded warrants could change. Accordingly, each U.S. holder and non-U.S. holder should consult its own tax advisors regarding the risks associated with the acquisition of a pre-funded warrant pursuant to this prospectus

(including potential alternative characterizations). The balance of this discussion generally assumes that the characterization described above is respected for U.S. federal income tax purposes.

In certain limited circumstances, a U.S. holder may be permitted to undertake a cashless exercise of pre-funded warrants into shares of common stock. The U.S. federal income tax treatment of a cashless exercise of pre-funded warrants into shares of common stock is unclear, and the tax consequences of a cashless exercise could differ from the consequences upon the exercise of a pre-funded warrant described in the preceding paragraph. U.S. holders should consult their own tax advisors regarding the U.S. federal income tax consequences of a cashless exercise of pre-funded warrants.

U.S. Holders

U.S. Federal Income Tax Consequences of the Exercise, Disposition or Expiration of Warrants or Certain Adjustments to the Warrants

Exercise of Warrants

A U.S. holder should not recognize gain or loss on the exercise of Warrants and related receipt of warrant shares (unless cash is received in lieu of the issuance of a fractional warrant share). A U.S. holder's initial tax basis in the warrant shares received on the exercise of Warrants should be equal to the sum of (a) such U.S. holder's tax basis in such Warrants plus (b) the exercise price paid by such U.S. holder on the exercise of such Warrants. It is unclear whether a U.S. holder's holding period for the warrant shares received on the exercise of Warrants would commence on the date of exercise of the Warrants or the day following the date of exercise of the Warrants.

In certain limited circumstances, a U.S. holder may be permitted to undertake a cashless exercise of Warrants into warrant shares. The U.S. federal income tax treatment of a cashless exercise of Warrants into warrant shares is unclear, and the tax consequences of a cashless exercise could differ from the consequences upon the exercise of Warrants described in the preceding paragraph. U.S. holders should consult their own tax advisors regarding the U.S. federal income tax consequences of a cashless exercise of Warrants.

Disposition of Warrants

A U.S. holder will recognize gain or loss on the sale or other taxable disposition of a Warrant in an amount equal to the difference, if any, between (a) the amount of cash plus the fair market value of any property received and (b) such U.S. holder's tax basis in the Warrant sold or otherwise disposed of. Any such gain or loss generally will be a capital gain or loss, which will be long-term capital gain or loss if the Warrant is held for more than one year. Deductions for capital losses are subject to complex limitations under the Internal Revenue Code.

Expiration of Warrants Without Exercise

Upon the lapse or expiration of a Warrant, a U.S. holder will recognize a loss in an amount equal to such U.S. holder's tax basis in the Warrant. Any such loss generally will be a capital loss and will be long-term capital loss if the Warrant is held for more than one year. Deductions for capital losses are subject to complex limitations under the Internal Revenue Code.

Certain Adjustments to the Warrants

Under Section 305 of the Internal Revenue Code, an adjustment to the number of warrant shares that will be issued on the exercise of the Warrants, or an adjustment to the exercise price of the Warrants, may be treated as a constructive distribution to a U.S. holder of the Warrants if, and to the extent that, such adjustment has the effect of increasing such U.S. holder's proportionate interest in the "earnings and profits" or our assets, depending on the circumstances of such adjustment (for example, if such adjustment is to compensate for a distribution of cash or other property to our shareholders). Adjustments to the exercise price of Warrants made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders of the Warrants should generally not be considered to result in a constructive distribution. Any such constructive distribution would be taxable whether or not there is an actual distribution of cash or other property. (See more detailed discussion of the rules applicable to distributions made by us at "*Distributions on Shares of Common Stock, Pre-Funded Warrants and Warrant Shares*" below).

U.S. Federal Income Tax Consequences of the Acquisition, Ownership, and Disposition of Shares of Common Stock, Pre-Funded Warrants and Warrant Shares

Distributions on Shares of Common Stock, Pre-Funded Warrants and Warrant Shares

A U.S. holder that receives a distribution, including a constructive distribution, with respect to a share of common stock, pre-funded warrant or warrant share (as well as any constructive distribution on a Warrant as described above) will be required to include the amount of such distribution in gross income as a dividend to the extent of our current and accumulated "earnings and profits", as computed under U.S. federal income tax principles. To the extent that a distribution exceeds our current and accumulated "earnings and profits", such distribution will be treated first as a tax-free return of capital to the extent of a U.S. holder's tax basis in the shares of common stock, pre-funded warrants or warrant shares and thereafter as gain from the sale or exchange of such shares of common stock, pre-funded warrants or warrant shares (see "*Sale or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants and/or Warrant Shares*" below). Dividends received on shares of common stock, pre-funded warrants or warrant shares may be eligible for a dividends received deduction, subject to certain restrictions relating to, among others, the corporate U.S. holder's taxable income, holding period and debt financing. Dividends paid by us to non-corporate U.S. holders, including individuals, generally will be eligible for the preferential tax rates applicable to long-term capital gains for dividends, provided certain holding period and other conditions are satisfied. The dividend rules are complex, and each U.S. holder should consult its own tax advisor regarding the application of such rules.

Sale or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants and/or Warrant Shares

Upon the sale or other taxable disposition of shares of common stock, pre-funded warrants or warrant shares, a U.S. holder generally will recognize capital gain or loss in an amount equal to the difference between (a) the amount of cash plus the fair market value of any property received and (b) such U.S. holder's tax basis in such shares of common stock, pre-funded warrants or warrant shares sold or otherwise disposed of. Gain or loss recognized on such sale or other taxable disposition generally will be long-term capital gain or loss if, at the time of the sale or other taxable disposition, the shares of common stock, pre-funded warrants or warrant shares have been held for more than one year. Preferential tax rates may apply to long-term capital gain of a U.S. holder that is an individual, estate, or trust. There are no preferential tax rates for long-term capital gain of a U.S. holder that is a corporation. Deductions for capital losses are subject to significant limitations under the Internal Revenue Code.

Non-U.S. Holders

U.S. Federal Income Tax Consequences of the Exercise, Disposition or Expiration of Warrants or Certain Adjustments to the Warrants

Exercise of Warrants

A non-U.S. holder generally will not recognize gain or loss on the exercise of Warrants and related receipt of warrant shares (unless cash is received in lieu of the issuance of a

fractional warrant share and certain other conditions are present, as discussed below under "*Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants, Warrants and Warrant Shares*"). A non-U.S. holder's initial tax basis in the warrant shares received on the exercise of Warrants should be equal to the sum of (i) the non-U.S. holder's tax basis in the Warrants, plus (ii) the exercise price paid by the non-U.S. holder on the exercise of the Warrants. It is unclear whether a non-U.S. holder's holding period for the warrant shares received on the exercise of Warrants would commence on the date of exercise of the Warrants or the day following the date of exercise of the Warrants.

In certain limited circumstances, a non-U.S. holder may be permitted to undertake a cashless exercise of Warrants into warrant shares. The U.S. federal income tax treatment of a cashless exercise of Warrants into warrant shares is unclear, and the tax consequences of a cashless exercise could differ from the consequences upon the exercise of Warrants described in the preceding paragraph. Non-U.S. holders should consult their own tax advisors regarding the U.S. federal income tax consequences of a cashless exercise of Warrants.

Disposition of Warrants

A non-U.S. Holder will recognize gain or loss on the sale or other taxable disposition of a Warrant in an amount equal to the difference, if any, between (a) the amount of cash plus the fair market value of any property received and (b) such non-U.S. holder's tax basis in the Warrant sold or otherwise disposed of. Any such gain or loss generally will be a capital gain or loss, which will be long-term capital gain or loss if the Warrant is held for more than one year. Any such gain recognized by a non-U.S. holder will be taxable for U.S. federal income tax purposes according to rules discussed under the heading "*Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants, Warrants and Warrant Shares*" below.

Expiration of Warrants without Exercise

Upon the lapse or expiration of a Warrant, a non-U.S. holder will recognize loss in an amount equal to such non-U.S. holder's tax basis in the Warrant. Any such loss generally will be a capital loss and will be long-term capital loss if the Warrants are held for more than one year. Deductions for capital losses are subject to complex limitations under the Internal Revenue Code.

Certain Adjustments to the Warrants

Under Section 305 of the Internal Revenue Code, an adjustment to the number of warrant shares that will be issued on the exercise of the Warrants, or an adjustment to the exercise price of the Warrants, may be treated as a constructive distribution to a non-U.S. holder of the Warrants if, and to the extent that, such adjustment has the effect of increasing such non-U.S. holder's proportionate interest in our "earnings and profits" or assets, depending on the circumstances of such adjustment (for example, if such adjustment is to compensate for a distribution of cash or other property to our shareholders). Adjustments to the exercise price of a Warrant made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders of the Warrants should generally not result in a constructive distribution. See the more detailed discussion of the rules applicable to distributions made by us under the heading "*Distributions on Shares of Common Stock, Pre-Funded Warrants and Warrant Shares*" below.

U.S. Federal Income Tax Consequences of the Acquisition, Ownership, and Disposition of Shares of Common Stock, Pre-Funded Warrants and Warrant Shares

Distributions on Shares of Common Stock, Pre-Funded Warrants and Warrant Shares

If we pay distributions of cash or property with respect to our shares of common stock, pre-funded warrants or warrant shares, those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in its shares of common stock, pre-funded warrants or warrants shares, as applicable. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "*— Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants, Warrants and Warrant Shares*." Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. In the case of any constructive distribution, it is possible that this tax would be withheld from any amount owed to the non-U.S. holder, including, but not limited to, distributions of cash, shares of common stock or sales proceeds subsequently paid or credited to that holder. If we are unable to determine, at the time of payment of a distribution, whether the distribution will constitute a dividend, we may nonetheless choose to withhold any U.S. federal income tax on the distribution as permitted by U.S. Treasury Regulations. If we are a USRPHC (as defined below) and we do not qualify for the Regularly Traded Exception (as defined below), distributions which constitute a return of capital will be subject to withholding tax unless an application for a withholding certificate is filed to reduce or eliminate such withholding.

Distributions that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States are generally not subject to the 30% (or lower rate as may be specified by an applicable tax treaty) withholding tax if the non-U.S. holder provides a properly executed IRS Form W-8ECI stating that the distributions are not subject to withholding because they are effectively connected with the non-U.S. holder's conduct of a trade or business in the United States. If a non-U.S. holder is engaged in a trade or business in the United States and the distribution is effectively connected with the conduct of that trade or business, the distribution will generally have the consequences described above for a U.S. holder (subject to any modification provided under an applicable income tax treaty). Any U.S. effectively connected income received by a non-U.S. holder that is treated as a corporation for U.S. federal income tax purposes may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate (or such lower rate as may be specified by an applicable income tax treaty).

A non-U.S. holder who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E, as applicable, and satisfy applicable certification and other requirements. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty generally may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS. Non-U.S. holders should consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Pre-Funded Warrants, Warrants and Warrant Shares

Subject to the discussions below in *"—Information Reporting and Backup Withholding*" and *"—Foreign Account Tax Compliance Act*," a non-U.S. holder generally will not be subject to U.S. federal income tax on gain recognized on a sale, exchange or other taxable disposition of our shares of common stock, pre-funded warrants, Warrants, or warrant shares unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business in the United States and, if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment maintained by the non-U.S. holder in the United States; in these cases, the non-U.S. holder will be taxed on a net income basis at the regular graduated rates and in the manner applicable to a U.S. holder, and, if the non-U.S. holder is a corporation, an additional branch profits tax at a rate of 30%, or a lower rate as may be specified by an applicable income tax treaty, may also apply;

- the non-U.S. holder is an individual present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty) on the amount by which such non-U.S. holder's capital gains allocable to U.S. sources exceed capital losses allocable to U.S. sources during the taxable year of the disposition; or

- we are or have been a "U.S. real property holding corporation" ("**USRPHC**") for U.S. federal income tax purposes at any time during the shorter of the non-U.S. holder's holding period or the 5-year period ending on the date of disposition of shares of common stock, pre-funded warrants, Warrants or warrant shares; provided, with respect to the shares of common stock and warrant shares, that as long as our shares of common stock are regularly traded on an established securities market as determined under the U.S. Treasury Regulations (the "**Regularly Traded Exception**"), a non-U.S. holder would not be subject to taxation on the gain on the sale of shares of common stock or warrant shares under this rule unless the non-U.S. holder has owned: (i) more than 5% of our shares of common stock at any time during such 5-year or shorter period; (ii) pre-funded warrants with a fair market value on the date acquired by such holder greater than the fair market value on that date of 5% of our shares of common stock; (iii) Warrants with a fair market value on the date acquired by such holder greater than the fair market value on that date of 5% of our shares of common stock; or (iv) aggregate equity securities of ours with a fair market value on the date acquired in excess of 5% of the fair market value of our shares of common stock on such date (in any case, a "**5% Shareholder**"). Since the Warrants are not expected to be listed on a securities market, the Warrants are unlikely to qualify for the Regularly Traded Exception. Special rules apply to the pre-funded warrants. Non-U.S. holders holding pre-funded warrants should consult their own tax advisors regarding such rules. In determining whether a non-U.S. holder is a 5% Shareholder, certain attribution rules apply in determining ownership for this purpose. We believe that we are not currently, and do not anticipate becoming in the future, a USRPHC for U.S. federal income tax purposes. However, we can provide no assurances that we are not currently, or will not become, a USRPHC, or if we are or become a USRPHC, that the shares of common stock, pre-funded warrants, Warrants or warrant shares will meet the Regularly Traded Exception at the time a non-U.S. holder purchases such securities or sells, exchanges or otherwise disposes of such securities. Non-U.S. holders should consult with their own tax advisors regarding the consequences to them of investing in a USRPHC. If we are a USRPHC, a non-U.S. holder will be taxed as if any gain or loss were effectively connected with the conduct of a trade or business as described above in "*Distributions on Shares of Common Stock, Pre-Funded Warrants and Warrant Shares*" in the event that (i) such holder is a 5% Shareholder, or (ii) the Regularly Traded Exception is not satisfied during the relevant period.

Information Reporting and Backup Withholding

Distributions on, and the payment of the proceeds of a disposition of, our shares of common stock, pre-funded warrants and warrant shares generally will be subject to information reporting if made within the United States or through certain U.S.-related financial intermediaries. Information returns are required to be filed with the IRS and copies of information returns may be made available to the tax authorities of the country in which a holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding may also apply if the holder fails to provide certification of exempt status or a correct U.S. taxpayer identification number and otherwise comply with the applicable backup withholding requirements. Generally, a holder will not be subject to backup withholding if it provides a properly completed and executed IRS Form W-9 or appropriate IRS Form W-8, as applicable. Backup withholding is not an additional tax. Amounts withheld under the backup withholding rules may be refunded or credited against the holder's U.S. federal income tax liability, if any, provided certain information is timely filed with the IRS.

Foreign Account Tax Compliance Act

Sections 1471 through 1474 of the Internal Revenue Code (commonly referred to as "**FATCA**") impose a separate reporting regime and potentially a 30% withholding tax on certain payments, including payments of dividends on our shares of common stock, pre-funded warrants and warrant shares. Withholding under FATCA generally applies to payments made to or through a foreign entity if such entity fails to satisfy certain disclosure and reporting rules. These rules generally require (i) in the case of a foreign financial institution, that the financial institution agree to identify and provide information in respect of financial accounts held (directly or indirectly) by U.S. persons and U.S.-owned entities, and, in certain instances, to withhold on payments to account holders that fail to provide the required information, and (ii) in the case of a non-financial foreign entity, that the entity either identify and provide information in respect of its substantial U.S. owners or certify that it has no such U.S. owners.

FATCA withholding also potentially applies to payments of gross proceeds from the sale or other disposition of our shares of common stock, pre-funded warrants and warrant shares. Proposed U.S. Treasury Regulations, however, would eliminate FATCA withholding on such payments, and the U.S. Treasury Department has indicated that taxpayers may rely on this aspect of the proposed U.S. Treasury Regulations until final U.S. Treasury Regulations are issued.

Non-U.S. holders typically will be required to furnish certifications (generally on the applicable IRS Form W-8) or other documentation to provide the information required by FATCA or to establish compliance with or an exemption from withholding under FATCA. FATCA withholding may apply where payments are made through a non-U.S. intermediary that is not FATCA compliant, even where the non-U.S. holder satisfies the holder's own FATCA obligations.

The United States and a number of other jurisdictions have entered into intergovernmental agreements to facilitate the implementation of FATCA. Any applicable intergovernmental agreement may alter one or more of the FATCA information reporting and withholding requirements. You are encouraged to consult with your own tax advisor regarding the possible implications of FATCA on your investment in our shares of common stock, pre-funded warrants or warrant shares, including the applicability of any intergovernmental agreements.

THE ABOVE SUMMARY IS NOT INTENDED TO CONSTITUTE A COMPLETE ANALYSIS OF ALL TAX CONSIDERATIONS APPLICABLE TO PROSPECTIVE INVESTORS WITH RESPECT TO THE ACQUISITION, OWNERSHIP, AND DISPOSITION OF UNITS, PRE-FUNDED UNITS, SHARES OF COMMON STOCK, PRE-FUNDED WARRANTS, WARRANTS OR WARRANT SHARES. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS AS TO THE TAX CONSIDERATIONS APPLICABLE TO THEM IN LIGHT OF THEIR OWN PARTICULAR CIRCUMSTANCES.

LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Dorsey & Whitney LLP, Salt Lake City, Utah. The placement agent is being represented by Ellenoff Grossman & Schole LLP, New York, New York.

EXPERTS

The consolidated financial statements of SINTX Technologies, Inc., as of December 31, 2021 and 2020, and for each of the years in the two-year period ended December 31, 2021, have been incorporated by reference herein in reliance on the report of Tanner LLC, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the

SEC's website at http://www.sec.gov. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge through the Internet. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. You may also access these filings through our website at www.sintx.com.

We have filed with the SEC a registration statement under the Securities Act relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the SEC at the address listed above. The registration statement, along with our most recent annual report on Form 10-K, subsequent reports on Form 10-Q and current reports on Form 8-K, as well as other filings that we make with the SEC, are also available on our Internet website, www.sintx.com. We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

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Report of Independent Registered Public Accounting Firm

Board of Directors and Stockholders of
SINTX Technologies, Inc.

Opinion on the Consolidated Financial Statements

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

Basis for Opinion

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

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

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

Critical Audit 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 our especially challenging, subjective, or complex judgments. The communication of the critical audit matter 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 account or disclosure to which it relates.

Warrants classified as Derivative Liabilities Valuation

As described in Note 1 to the financial statements, the Company initially records warrants classified as derivative liabilities at fair value and is required to re-measure the fair value each reporting period. The Company estimates the fair value of these instruments using Monte-Carlo valuation models. The significant assumptions used in estimating the fair value include the exercise price, volatility of the stock underlying the instrument, risk-free interest rate, estimated fair value of the stock underlying the instrument and the estimated life of the instrument.

We obtained an understanding, and evaluated the design and implementation of controls over the Company's process for calculating the fair values of the warrants

classified as derivative liabilities, including controls over management's review of the significant assumptions described above.

To test the estimated fair value of the warrants classified as derivative liabilities, we performed audit procedures that included, among others, assessing methodologies and testing the significant assumptions discussed above as well as the underlying data used by the Company in its analysis, and evaluating management's specialist.

/s/ TANNER LLC

(PCAOB ID 270)
We have served as the Company's auditors since 2017
Lehi, Utah
March 25, 2022, except for the subsequent events occurring after March 25, 2022 and the effects of the reverse stock split described in Note 15, as to which the date is January 31, 2023

SINTX Technologies, Inc.
Consolidated Balance Sheets
(in thousands, except share and per share data)

	As of December 31,	
	2021	**2020**
Assets		
Current assets:		
Cash and cash equivalents	$ 14,273	$ 25,351
Account and other receivables, net of allowance	102	41
Prepaid expenses and other current assets	350	243
Inventories	303	99
Note receivable, current portion	-	1,856
Total current assets	15,028	27,590
Inventories	294	388
Property and equipment, net	4,025	471
Intangible assets, net	31	36
Operating lease right of use asset	2,385	1,926
Other long-term assets	77	36
Total assets	$ 21,840	$ 30,447
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 217	$ 194
Accrued liabilities	1,150	909
Current portion of long-term debt	-	109
Derivative liabilities	347	1,238
Current portion of operating lease liability	500	403
Other current liabilities	-	26
Total current liabilities	2,214	2,879
Operating lease liability, net of current portion	1,898	1,477
Long term debt, net of current portion	-	287
Total liabilities	4,112	4,643
Commitments and contingencies		
Stockholders' equity:		
Convertible preferred stock Series B, $0.01 par value, 130,000,000 total shares authorized inclusive of all series of preferred; 26 shares issued and outstanding as of both December 31, 2021 and 2020.	-	-
Convertible preferred stock Series C, $0.01 par value, 130,000,000 total shares authorized inclusive of all series of preferred; 51 shares issued and outstanding as of both December 31, 2021 and 2020.	-	-
Common stock, $0.01 par value, 250,000,000 shares authorized; 247,105 and 245,524 shares issued and outstanding as of December 31, 2021 and 2020, respectively.	3	3
Additional paid-in capital	267,608	266,908
Accumulated deficit	(249,883)	(241,107)
Total stockholders' equity	17,728	25,804
Total liabilities and stockholders' equity	$ 21,840	$ 30,447

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

SINTX Technologies, Inc.
Consolidated Statements of Operations
(in thousands, except share and per share data)

	Years Ended December 31,	
	2021	**2020**

Product revenue	$ 606	$ 594
Costs of revenue	449	475
Gross profit	157	119
Operating expenses:		
Research and development	5,886	4,808
General and administrative	3,603	3,132
Sales and marketing	1,288	683
Total operating expenses	10,777	8,623
Loss from operations	(10,620)	(8,504)
Other income (expenses):		
Interest expense	-	(2)
Interest income	101	330
Offering costs	-	(1,246)
Forgiveness of PPP Loan	905	-
Change in fair value of derivative liabilities	696	2,111
Other income	143	282
Total other income, net	1,845	1,475
Net loss before income taxes	(8,775)	(7,029)
Provision for income taxes	-	-
Net loss	(8,775)	(7,029)
Deemed dividend related to beneficial conversion feature and accretion of discount on convertible preferred stock	-	(9,565)
Net loss attributable to common stockholders	$ (8,775)	$ (16,594)
Net loss per share – basic and diluted		
Basic – net loss	$ (36)	$ (43)
Basic – deemed dividend and accretion of a discount on conversion of preferred stock	-	(58)
Basic – attributable to common stockholders	$ (36)	$ (101)
Diluted – net loss	$ (38)	$ (53)
Diluted - deemed dividend and accretion of a discount on conversion of preferred stock	-	(55)
Diluted – attributable to common stockholders	$ (38)	$ (108)
Weighted average common shares outstanding:		
Basic	246,919	164,066
Diluted	250,701	174,462

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

SINTX Technologies, Inc.
Consolidated Statements of Stockholders' Equity
(in thousands, except share data)

	Preferred B Stock		Preferred C Stock		Common Stock		Paid-In	Accumulated	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Equity
Balance as of December 31, 2019	249	-	-	-	24,340	-	239,280	(234,078)	5,202
Extinguishment of derivative liability upon exercise of warrant	-	-	-	-	-	-	3,199	-	3,199
Common stock issued for cash, net of fees	-	-	-	-	113,694	1	19,995	-	19,996
Issuance of common stock from the cashless exercise of warrants	-	-	-	-	35,045	1	(1)	-	-
Issuance of common stock from the exercise of warrants for cash	-	-	-	-	7,410	-	1,111	-	1,111
Preferred stock issued for cash	-	-	9,440	-	-	-	3,112	-	3,112
Common stock issued on conversion of preferred stock	(223)	-	(9,389)	-	65,035	1	(1)	-	-
Issuance of agent warrants	-	-	-	-	-	-	168	-	168
Beneficial conversion feature on issuance of convertible preferred stock	-	-	-	-	-	-	3,111	-	3,111
Deemed dividend related to the issuance of preferred stock	-	-	-	-	-	-	(3,111)	-	(3,111)
Accretion of convertible preferred stock discount	-	-	-	-	-	-	6,454	-	6,454
Deemed dividend related to the conversion of preferred stock	-	-	-	-	-	-	(6,454)	-	(6,454)
Stock-based compensation	-	-	-	-	-	-	45	-	45
Net loss	-	-	-	-	-	-	-	(7,029)	(7,029)
Balance as of December 31, 2020	26	$ -	51	$ -	245,524	$ 3	$ 266,908	$ (241,107)	$ 25,804
Extinguishment of derivative liability upon exercise of warrant	-	-	-	-	-	-	195	-	195
Issuance of common stock from the cashless exercise of warrants	-	-	-	-	19	-	-	-	-
Issuance of common stock from the exercise of warrants for cash	-	-	-	-	1,302	-	196	-	196
Stock-based compensation	-	-	-	-	260	-	309	-	309
Net loss	-	-	-	-	-	-	-	(8,775)	(8,775)
Balance as of December 31, 2021	26	$ -	51	$ -	247,105	$ 3	$ 267,608	$ (249,883)	$ 17,728

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

SINTX Technologies, Inc.
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended December 31,	
	2021	**2020**
Cash flow from operating activities		
Net loss	$ (8,775)	$ (7,029)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation expense	185	78
Amortization of right of use asset	460	415
Amortization of intangible assets	5	5
Non-cash interest income	(88)	(299)
Stock based compensation	309	45
Change in fair value of derivative liabilities	(696)	(2,111)
Offering costs	-	325
Gain on disposal of equipment	(144)	-
Non-cash other income – forgiveness of loans	(905)	-
Changes in operating assets and liabilities:		
Account and other receivables	(61)	94
Prepaid expenses and other assets	(149)	(91)
Inventories	(110)	153
Accounts payable and accrued liabilities	264	(350)
Other Liabilities	(26)	-
Payments on operating lease liability	(401)	(347)
Net cash used in operating activities	(10,132)	(9,112)
Cash flows from investing activities		
Purchase of property and equipment	(3,739)	(360)
Proceeds from note receivable, net of imputed interest	1,944	2,111
Proceeds from the sale of property and equipment	144	-
Net cash provided by (used in) investing activities	(1,651)	1,751
Cash flows from financing activities		
Proceeds from issuance of warrant derivative liabilities	-	6,328
Proceeds from issuance of common stock, net of fees	-	19,995
Proceeds from issuance of preferred stock, net of fees	-	3,112
Proceeds from issuance of common stock in connection with exercise of warrants	196	1,111
Principal payment on debt	-	(27)
Proceeds from issuance of debt	509	406
Net cash provided by financing activities	705	30,925
Net increase (decrease) in cash and cash equivalents	(11,078)	23,564
Cash and cash equivalents at beginning of year	25,351	1,787
Cash and cash equivalents at end of year	$ 14,273	$ 25,351

	Years Ended December 31,	
	2021	**2020**
Noncash investing and financing activities		
Right-of-Use Assets and assumption of operating lease liability	$ 918	$ -
Extinguishment of derivative liabilities through exercise of warrants	195	$ 3,199
Change in par value due to conversion of preferred stock to common stock	-	65
Issuance of Common Stock for the Cashless Exercise of Warrants	-	35
Supplemental cash flow information		
Cash paid for interest	$ -	$ 2

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

1. Organization and Summary of Significant Accounting Policies

The consolidated financial statements include the accounts of SINTX Technologies, Inc. (“SINTX”) and its wholly-owned subsidiary, SINTX Armor, Inc. (“SINTX Armor”), which are collectively referred to as “we” or “the Company”. SINTX was incorporated in the state of Delaware on December 10, 1996 (and was previously known as Amedica Corporation). The Company is an OEM advanced ceramics materials company focused on providing solutions in a variety of medical, industrial, armor and antipathogenic applications. SINTX is a 25-year-old company that has grown over time from focusing on the research and development of silicon nitride for use in human interbody implants to becoming an advanced ceramics company engaged in many different fields, which has enabled the business to focus on core competencies. The core strength of the Company is the manufacturing, research, and development of advanced ceramics for external partners. The Company presently manufactures silicon nitride powders and components in its FDA registered, ISO 13485:2016 certified, and ASD9100D certified manufacturing facility. The Company’s products are primarily sold in the United States.

The Company is focused on building revenue generating opportunities in four business industries, namely, antipathogenic, armor, industrial, and biomedical connecting with current and new customers, partners and manufacturers to help realize the goal of leveraging expertise in high-tech ceramics to create new, innovative opportunities across these sectors. We also expect our continued investment in research and development to provide additional revenue opportunities.

The Company’s initial focus was the development and commercialization of products made from silicon nitride for use in spinal fusion and hip and knee replacement applications. SINTX believes it is the first and only manufacturer to use silicon nitride in medical applications primarily focused on spine fusion therapies. Since then, we have developed other applications for our silicon nitride technology as well as utilizing our expertise in the use of ceramic materials in other applications as well. In July 2021, the Company acquired the equipment and obtained certain proprietary know-how rights with which it intends to develop, manufacture and commercialize protective armor plates

from boron carbide and a composite material of silicon carbide and boron carbide for military, law enforcement and civilian uses (see Note 3). The protective armor plate operations will be housed in SINTX Armor.

On October 1, 2018, the Company completed the sale of its retail spine business to CTL Medical, a Dallas, Texas-based privately held medical device manufacturer. As a result of the sale, CTL Medical became the exclusive owner of the Company's portfolio of metal and silicon nitride spine products, as well as access to future silicon nitride spine technologies developed by the Company. The Company's name, Amedica, was also transferred to CTL Medical, which is now CTL Amedica. The Company serves as CTL's exclusive OEM provider of silicon nitride products. Manufacturing, R&D, and all intellectual property related to the core, non-spine, biomaterial technology including silicon nitride remains with the Company.

On October 30, 2018, the Company amended its Certificate of Incorporation with the State of Delaware to change its corporate name to SINTX Technologies, Inc. The Company also changed its trading symbol on the NASDAQ Capital Market to "SINT".

The Company's new corporate brand reflects both the Company's core competence in the science and production of silicon nitride ceramics and other ceramics, as well as encouraging prospects for the future, as an OEM supplier of spine implants to CTL Amedica, and multiple opportunities outside of spine.

Basis of Presentation and Principles of Consolidation

These consolidated financial statements have been prepared by management in accordance with the rules and regulations of the United States Securities and Exchange Commission ("SEC") and include all assets and liabilities of the Company. In May 2020, the Company dissolved a wholly owned subsidiary ST Sub, Inc. At the time of dissolution, the subsidiary had no assets, liabilities, equity, or operations.

Reverse Stock Split

On December 20, 2022, the Company effected a 1 for 100 reverse stock split of the Company's common stock. The par value and the authorized shares of the common and preferred stock were not adjusted as a result of the reverse stock split. All common stock shares, equivalents, and per-share amounts for all periods presented in these consolidated financial statements have been adjusted retroactively to reflect the reverse stock split.

Liquidity and Capital Resources

The consolidated financial statements have been prepared assuming the Company will continue to operate as a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business, and does not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result from uncertainty related to its ability to continue as a going concern within one year from the date of issuance of these consolidated financial statements.

For the years ended December 31, 2021 and 2020, the Company incurred a net loss of $8.8million and $7.0 million , respectively, and used cash in operations of $10.1 million and $9.1 million , respectively. The Company had an accumulated deficit of $249.9 million and $241.1 million as of December 31, 2021 and 2020, respectively. The Company's operations have been principally financed from proceeds from the issuance of preferred and common stock and, to a lesser extent, cash generated from product sales. It is anticipated that the Company will continue to generate operating losses and use cash in operations. The Company's continuation as a going concern is dependent upon its ability to increase sales, and/or raise additional funds through the capital markets. Whether and when the Company can attain profitability and positive cash flows from operations or obtain additional financing is uncertain.

The Company is actively generating additional scientific and clinical data to have it published in leading industry publications. The unique features of our advanced ceramic materials are not well known, and we believe the publication of such data would help sales efforts as the Company approaches new prospects. The Company is also making additional changes to the sales strategy, including a focus on revenue growth by expanding the use of silicon nitride in other areas outside of spinal fusion applications. The Company has also acquired equipment and certain proprietary know-how for the purpose of developing, manufacturing and commercializing armored plates made from boron carbide and a composite of boron carbide and silicon carbide for military, law enforcement and other civilian uses.

The Company has common stock that is publicly traded and has been able to successfully raise capital when needed since the date of the Company's initial public offering in February 2014. On February 6, 2020, the Company closed on a rights offering to its stockholders of units, consisting of convertible preferred stock and warrants, for gross proceeds of $9.4 million, which excludes underwriting discounts and commissions and offering expenses paid by the Company of approximately $1.2million. Additionally, during the period of June 2020 through August 2020, the Company closed four registered direct offerings of shares of its common stock, priced at-the-market under Nasdaq rules, resulting in the issuance of a total of 110,150 shares of its common stock for gross proceeds of approximately $20.9million, before considering issuance costs of approximately $1.6 million (see Note 8).

During the year ended December 31, 2019, the Company entered into an at-the-market (2019 ATM) equity distribution agreement with Maxim Group LLC ("Maxim") under which the Company could sell, from time to time, shares of common stock having an aggregate offering price of up to $2.5 million. During the year ended December 31, 2020, the Company sold 3,544 shares of common stock under the 2019 ATM, raising approximately $0.8 million before deducting fees to the placement agent and other offering expenses of approximately $0.034 million. As of December 31, 2021, no funding capacity is available under the 2019 ATM. (see Note 8).

On February 25, 2021, the Company entered into an at-the-market Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim, pursuant to which the Company may sell from time to time, shares of the Company's common stock having an aggregate offering price of up to $15.0 million through Maxim, as agent. As of December 31, 2021, there have been no sales of shares of common stock under the 2021 Distribution Agreement.

Management has concluded existing capital resources will be sufficient to fund operations for at least the next 12 months, or through March 2023.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. 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 period. Actual results could differ from those estimates. As of December 31, 2021, the most significant estimate relates to derivative liabilities and stock based compensation.

Concentrations of Credit Risk and Significant Customers

Financial instruments which potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents, and note receivables. Because the financial institution that the Company currently uses does not participate in the Certificate of Deposit Account Registry Service ("CDARS"), the Company does not presently have a program to limit its exposure to credit loss. The Company's deposits, at times, may exceed federally insured limits.

As of December 31, 2021, three customer's receivable balances accounted for 97% of the Company's total accounts receivable . One customer accounted for 88% and 95% of the Company's total revenues for the years ended December 31, 2021 and 2020 respectively.

Risks Related to COVID-19 Pandemic

The COVID-19 pandemic is affecting the United States and global economies and may affect the Company's operations and those of third parties on which the Company relies. In response to the spread of COVID-19 and to ensure safety of employees and continuity of business operations, we temporarily restricted access to the facility, with our administrative employees continuing their work remotely and limited the number of staff in our manufacturing facility. We implemented protective measures such as wearing of face masks, maintaining social distancing, and additional cleaning. Beginning in 2021, we have offered vaccination incentives. While the potential economic impact brought by, and the duration of, the COVID-19 pandemic is difficult to assess or predict, the impact of the COVID-19 pandemic on the global financial markets may reduce the Company's ability to access capital, which could negatively impact the Company's short-term and long-term liquidity. The ultimate impact of the COVID-19 pandemic is highly uncertain and subject to change. The Company does not yet know the full extent of potential delays or impacts on its business, financing or other activities or on healthcare systems or the global economy as a whole. However, these effects could have a material impact on the Company's liquidity, capital resources, operations and business and those of the third parties on which we rely.

Revenue Recognition

During the years ended December 31, 2021 and 2020 the Company derived its product revenue primarily from the sale of spinal fusion products, used in the treatment of spine disorders to CTL Medical, with whom the Company signed a 10-year exclusive sales agreement in October 2018. The Company is currently pursuing other sales opportunities for silicon nitride outside the spinal fusion application.

Revenue is recognized when control of the goods or services promised under the contract is transferred to the customer either at a point in time (e.g., upon delivery) or over time (e.g., as performed under the contract). The Company accounts for a contract when it has approval and commitment from both parties, the rights and payment terms of the parties are identified, the contract has commercial substance and collectability of consideration is probable. Contracts are reviewed to determine whether there is one or multiple performance obligations. A performance obligation is a promise to transfer a distinct good or service to a customer and represents the unit of accounting for revenue recognition. For contracts with multiple performance obligations, the expected consideration, or the transaction price, is allocated to each performance obligation identified in the contract based on the relative standalone selling price of each performance obligation. Revenue is then recognized for the transaction price allocated to the performance obligation when control of the promised goods or services underlying the performance obligation is transferred. Contract consideration is not adjusted for the effects of a significant financing component when, at contract inception, the period between when control transfers and when the customer will pay for that good or service is one year or less. Contact modifications that provide for additional distinct goods or services at the standalone selling price are treated as separate contracts. The transaction price for our contracts reflects our estimate of returns, rebates and discounts, which historically have not been significant. Amounts billed to customers for shipping and handling are included in the transaction price and generally are not treated as separate performance obligations as these costs fulfill a promise to transfer the product to the customer. The Company does not employee salespeople to actively seek additional customers; there are no incremental costs for obtaining customers that need to be capitalized.

The Company recognizes revenue from sales at the time the product is shipped.

Costs of Revenue

The expenses that are included in costs of revenue include all raw material and in-house manufacturing costs for the products we manufacture.

Cash and Cash Equivalents

The Company considers all cash on deposit, money market accounts and highly-liquid debt instruments purchased with original maturities of three months or less to be cash and cash equivalents.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost for manufactured inventory determined under the standard costs, which approximate actual costs, determined on the first-in first-out ("FIFO") method. Manufactured inventory consists of raw material, direct labor and manufacturing overhead cost components. The Company reviews the carrying value of inventory on a periodic basis for excess or obsolete items, and records any write-down as a cost of revenue, as necessary. Inventory that is not expected to be utilized within 12 months of December 31, 2021, and 2020, respectively is recorded as long term.

Property and Equipment

Property and equipment, including leasehold improvements, are stated at cost, less accumulated depreciation and amortization. Property and equipment are depreciated using the straight-line method over the estimated useful lives of the assets, which range from three to five years. Leasehold improvements are amortized over the shorter of their estimated useful lives or the related lease term, generally five years.

The Company reviews the carrying value of the Company's property and equipment that are held and used in the Company's operations for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of these assets is determined based upon expected undiscounted future net cash flows from the operations to which the assets relate, utilizing management's best estimate, assumptions, and projections at the time. If the carrying value is determined to be unrecoverable from future operating cash flows, the asset is deemed impaired and an impairment charge would be recognized to the extent the carrying value exceeded the estimated fair value of the asset. The Company estimates the fair value of assets based on the estimated future discounted cash flows of the asset.

Leases

The Company determines if an arrangement is a lease at inception. Operating leases are in operating lease right of use asset and operating lease liability in our consolidated balance sheet. Finance leases, if any, are included in property and equipment in our consolidated balance sheet. Leases with an initial term of 12 months or less are not presented on the consolidated balance sheet. The Company accounts for lease payments separately than from non-lease components. The depreciable life of the asset and leasehold improvement are limited by the expected lease term.

Account and Other Receivables and Allowance for Doubtful Accounts

Account and other receivables are carried at invoiced amount less an allowance for doubtful accounts. On a regular basis, the Company evaluates account and other receivables and estimates an allowance for doubtful accounts, as needed, based on various factors such as customers' current credit conditions, length of time past due, and the general economy as a whole. Receivables are written off against the allowance when they are deemed uncollectible.

Long Lived Intangible Assets

The Company evaluates the carrying value of intangibles when events or changes in circumstances indicate that the carrying value may not be recoverable. Factors the

Company considers important which could trigger an impairment review include, but are not limited to, significant under-performance relative to historical or projected future operating results, significant changes in the manner of its use of acquired assets or its overall business strategy, and significant industry or economic trends. The Company amortizes definite-lived intangible assets on a straight-line basis over their useful lives. The Company recorded no impairment loss for definite-lived intangible assets during the year ended December 31, 2021.

Derivative Liabilities

Derivative liabilities include the fair value of certain common stock warrants, that are initially recorded at fair value and are required to be re-measured to fair value at each reporting period. The change in fair value of the instruments is recognized as a component of other income (expense) in the Company's consolidated statements of operations until the instruments settle, expire or are no longer classified as derivative liabilities. The Company estimates the fair value of these instruments primarily using Monte-Carlo valuation models. The significant assumptions used in estimating the fair value include the exercise price, volatility of the stock underlying the instrument, risk-free interest rate, estimated fair value of the stock underlying the instrument and the estimated life of the instrument.

Research and Development

All research and development costs, including those funded by third parties, are expensed as incurred. Research and development costs consist of engineering, product development, test-part manufacturing, testing, developing and validating the manufacturing process, and regulatory related costs. Research and development expenses also include employee compensation, employee and nonemployee stock-based compensation, supplies and materials, consultant services, and travel and facilities expenses related to research activities.

We expect to incur additional research and development costs as we continue to develop new biomedical and antipathogenic products.

Advertising Costs

Advertising costs are expensed as incurred. The primary component of the Company's advertising expenses is advertising in trade periodicals. Advertising costs were not significant for each of the years ended December 31, 2021 and 2020.

Income Taxes

The Company recognizes deferred tax assets and liabilities for the future tax consequences attributable to the differences between the financial statement carrying value of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the fiscal year in which those temporary differences are expected to be recovered or settled. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

The Company operates in various tax jurisdictions and is subject to audit by various tax authorities. The Company provides for tax contingencies whenever it is deemed probable that a tax asset has been impaired, or a tax liability has been incurred for events such as tax claims or changes in tax laws. Tax contingencies are based upon their technical merits relative tax law and the specific facts and circumstances as of each reporting period. Changes in facts and circumstances could result in material changes to the amounts recorded for such tax contingencies.

The Company recognizes uncertain income tax positions taken on income tax returns at the largest amount that is more-likely than-not to be sustained upon audit by the relevant taxing authority. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained.

The Company's policy for recording interest and penalties associated with uncertain tax positions is to record such items as a component of our income tax provision. For the years ended December 31, 2021 and 2020, the Company did not record any material interest income, interest expense or penalties related to uncertain tax positions or the settlement of audits for prior periods.

Stock-Based Compensation

The Company measures stock-based compensation expense related to employee stock-based awards based on the estimated fair value of the awards as determined on the date of grant and is recognized as expense over the remaining requisite service period. The Company utilizes the Black-Scholes-Merton option pricing model to estimate the fair value of employee stock options. The Black-Scholes-Merton model requires the input of subjective assumptions, including the estimated fair value of the Company's common stock on the date of grant, the expected term of the stock option, and the expected volatility of the Company's common stock over the period equal to the expected term of the grant. The Company estimates forfeitures at the date of grant and revises the estimates, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company accounts for stock options to purchase shares of stock that are issued to non-employees based on the estimated fair value of such instruments using the Black-Scholes-Merton option pricing model.

Offering Costs

Offering costs consist of legal, accounting, and other advisory costs related to the Company's efforts to raise debt and equity capital.

Offering costs paid in cash or by issuing warrants associated with the Company's equity fundraising activities are either recorded to additional paid in capital as a reduction of the proceeds or expensed in the case of failed offerings.

New Accounting Pronouncement, Not Yet Adopted

The Company has reviewed all other recently issued, but not yet adopted, accounting standards, in order to determine their effects, if any, on its results of operations, financial position or cash flows. Based on that review, the Company believes that no other pronouncements will have a significant effect on its financial statements upon adoption.

Net Loss Per Share – Basic and Diluted

Basic net income (loss) per share is calculated by dividing the net income (loss) by the weighted-average number of shares of common stock outstanding for the period, without consideration for common stock equivalents. Diluted net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock equivalents outstanding for the period that are determined to be dilutive. Common stock equivalents are primarily comprised of preferred stock, options and warrants for the purchase of common stock The Company had potentially dilutive securities, totaling approximately 18,000 and 15,000 shares of common stock as of December 31, 2021 and

2020, respectively.

Below are basic and diluted loss per share data for the year ended December 31, 2021, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (8,775)	$ (696)	$ (9,471)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (8,775)	$ (696)	$ (9,471)
Denominator:			
Number of shares used in per common share calculations:	246,919	3,782	250,701
Net loss per common share:			
Net loss	$ (36)	$ (2)	$ (38)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (36)	$ (2)	$ (38)

Below are basic and diluted loss per share data for the year ended December 31, 2020, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (7,029)	$ (2,293)	$ (9,323)
Deemed dividend and accretion of a discount	(9,565)	-	(9,565)
Net loss attributable to common stockholders	$ (16,594)	$ (2,293)	$ (18,888)
Denominator:			
Number of shares used in per common share calculations:	164,066	10,396	174,462
Net loss per common share:			
Net loss	$ (43)	$ (10)	$ (53)
Deemed dividend and accretion of a discount	(58)	3	(55)
Net loss attributable to common stockholders	$ (101)	$ (7)	$ (108)

2. Inventories

The components of inventory were as follows (in thousands):

	As of December 31,	
	2021	2020
Raw materials	$ 411	$ 388
WIP	134	97
Finished goods	52	2
	$ 597	$ 487

3. Property and Equipment

The following is a summary of the components of property and equipment (in thousands):

	As of December 31,	
	2021	2020
Manufacturing and lab equipment	$ 4,286	$ 558
Leasehold improvements	936	941
Software and computer equipment	696	684
Furniture and equipment	82	82
	6,000	2,265
Less: accumulated depreciation	(1,975)	(1,794)
	$ 4,025	$ 471

Depreciation expense for 2021 was approximately $0.2 million. Depreciation expense for 2020 was approximately $0.1 million.

Of the $4.3 million in manufacturing and lab equipment listed as of December 31, 2021, $2.7million is related to the purchase of equipment for SINTX Armor. As explained in Note 1, on July 20, 2021, the Company acquired the equipment and obtained certain intellectual know how with which it intends to develop, manufacture and commercialize protective armor plates from boron carbide and a composite material of silicon carbide and boron carbide for military, law enforcement and civilian uses. The total purchase price for the assets was $2.8 million, $2.7 million of which has been paid and the remaining $0.1 million is to be paid upon completion of certain checkpoints.

As of December 31, 2021, the assets have not yet been placed in service, nor has the Company recognized any depreciation expense associated with these assets. The intention of the Company is to place these assets into service by mid 2022.

4. Intangible Assets

Intangible assets consisted of the following (in thousands):

	Years Ended December 31,	
	2021	2020
Trademarks	$ 50	$ 50
Less: accumulated amortization	(19)	(14)
	$ 31	$ 36

Amortization expense for 2021 was approximately $5.0 thousand. Amortization expense for 2020 was approximately $5.0 thousand.

5. Fair Value Measurements

Financial Instruments Measured and Recorded at Fair Value on a Recurring Basis

The Company has issued certain warrants to purchase shares of common stock, which are considered mark-to-market liabilities and are re-measured to fair value at each reporting period in accordance with accounting guidance. Fair value is based on the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, under a three-tier fair value hierarchy which prioritizes the inputs used in measuring fair value as follows:

Level 1 - quoted market prices for identical assets or liabilities in active markets.

Level 2 - observable prices that are based on inputs not quoted on active markets but corroborated by market data.

Level 3 - unobservable inputs reflecting management's assumptions, consistent with reasonably available assumptions made by other market participants. These valuations require significant judgment.

The Company classifies assets and liabilities measured at fair value in their entirety based on the lowest level of input that is significant to their fair value measurement. No financial assets were measured on a recurring basis as of December 31, 2021 and 2020. The following tables set forth the financial liabilities measured at fair value on a recurring basis by level within the fair value hierarchy as of December 31, 2021 and 2020.

	Fair Value Measurements as of December 31, 2021 (in thousands)			
Description	**Level 1**	**Level 2**	**Level 3**	**Total**
Derivative liability				
Common stock warrants	$ -	$ -	$ 347	$ 347

	Fair Value Measurements as of December 31, 2020 (in thousands)			
Description	**Level 1**	**Level 2**	**Level 3**	**Total**
Derivative liability				
Common stock warrants	$ -	$ -	$ 1,238	$ 1,238

The Company did not have any transfers of assets and liabilities between Level 1 and Level 2 of the fair value measurement hierarchy during the years ended December 31, 2021 and 2020. The following table presents a reconciliation of the derivative liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) during the years ended December 31, 2021 and 2020 (in thousands):

	Common Stock Warrants
Balance as of December 31, 2019	$ (220)
Issuance of derivatives	(6,328)
Change in fair value	2,111
Exercise of warrants	3,199
Balance as of December 31, 2020	(1,238)
Change in fair value	696
Exercise of warrants	195
Balance as of December 31, 2021	$ (347)

Common Stock Warrants

The Company has issued certain warrants to purchase shares of common stock, which are considered derivative liabilities because they have registration rights which could require a cash settlement and are re-measured to fair value at each reporting period in accordance with accounting guidance. As of December 31, 2021, and 2020, the derivative liability was calculated using the Monte Carlo Simulation valuation.

The assumptions used in estimating the common stock warrant liability using the Monte Carlo simulation valuation model as of December 31, 2021 and 2020 were as follows:

	December 31, 2021	December 31, 2020
Weighted-average risk-free interest rate	0.06%-0.97%	0.09%-0.27%
Weighted-average expected life (in years)	0.07-3.10	0.63-4.10
Expected dividend yield	-%	-%
Weighted average expected volatility	71.5%-126.5%	138.3%-175.6%

Other Financial Instruments

The Company's recorded values of cash and cash equivalents, account and other receivables, accounts payable and accrued liabilities approximate their fair values based on their short-term nature. The recorded value of notes payable approximates the fair value as the interest rate approximates market interest rates.

6. Accrued Liabilities

Accrued liabilities consisted of the following (in thousands):

	Years Ended December 31,	
	2021	2020
Payroll and related expenses	$ 724	$ 600
Other	426	309
	$ 1,150	$ 909

7. Debt

2020 PPP Loan

On April 28, 2020, the Company received funding under a Paycheck Protection Program ("PPP") loan (the "PPP Loan") from First State Community Bank (the "Lender"). The principal amount of the PPP Loan was $0.4 million. The PPP was established under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and is administered by the U.S. Small Business Administration (the "SBA"). Loans made under the PPP may be partially or fully forgiven if the recipient complies with the provisions of the CARES Act, including the use of PPP Loan proceeds for payroll costs, rent, utilities and other expenses, provided that such amounts are incurred during a 24-week period that commenced on April 28, 2020 and at least 60% of any forgiven amount has been used for covered payroll costs as defined by the CARES Act. On January 5, 2021, the Lender provided notice to the Company that the principal amount and accrued interest had been forgiven. The Company removed the PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.4 million.

2021 PPP Loan

On March 15, 2021, the Company received funding under the SBA Second Draw Program under the Paycheck Protection Program ("2021 PPP") (the "2021 PPP Loan") from the Lender. The principal amount of the 2021 PPP Loan is $0.5 million. The Company received notice on November 24, 2021, that the principal amount and accrued interest had been forgiven. The Company removed the 2021 PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.5 million.

8. Equity

2021 Equity Distribution Agreement

On February 25, 2021, the Company entered into an Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim, pursuant to which the Company may sell from time to time, shares of the Company's common stock having an aggregate offering price of up to $15.0 million through Maxim, as agent.

Subject to the terms and conditions of the 2021 Distribution Agreement, Maxim will use its commercially reasonable efforts to sell the Shares from time to time, based on the Company's instructions. Under the 2021 Distribution Agreement, Maxim may sell the Shares by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including, without limitation, sales made directly on the Nasdaq Capital Market. We have no obligation to sell any shares under the 2021 Distribution Agreement and may at any time suspend offers under the 2021 Distribution Agreement. The Offering will terminate upon the earlier of (i) the sale of shares having an aggregate offering price of $15.0 million, (ii) the termination by either Maxim or the Company upon the provision of fifteen (15) days written notice, or (iii) February 25, 2023. Under the terms of the 2021 Distribution Agreement, Maxim will be entitled to a transaction fee at a fixed rate of 2.0% of the gross sales price of Shares sold under the 2021 Distribution Agreement. The Company will also reimburse Maxim for certain expenses incurred in connection with the 2021 Distribution Agreement and agreed to provide indemnification and contribution to Maxim with respect to certain liabilities under the Securities Act and the Securities Exchange Act of 1934, as amended. As of December 31, 2021 there have been no sales of shares of common stock under the 2021 Distribution Agreement.

2020 Rights Offering

During February 2020, the Company closed on a rights offering capital raise wherein the Company's holders of common stock, Series C Preferred Stock, and certain outstanding warrants, obtained, at no charge, non-transferable subscription rights to purchase certain units from the Company ("Units"). Each Unit consisted of one share of Series C Convertible Preferred Stock ("Preferred Stock") and 675 warrants to purchase common stock ("Warrants"). Each Unit sold for $1,000. Each share of the Preferred Stock is convertible, at the Company's option at any time on or after the first anniversary of the expiration of the rights offering or at the option of the holder at any time, into a number of shares of our common stock equal to the quotient of the stated value of the Preferred Stock ($1,000) divided by the Conversion Price ($1.4814 per share). Each Warrant is exercisable for one share of our common stock at an exercise price of $150 per share from the date of issuance through its expiration five years from the date of issuance. The Warrants also contain a cashless exercise provision that allows the holder to receive 70% of the common stock otherwise available under the warrant to the holder electing the cashless exercise provision. The Company issued 9,440 Units, comprised of 63,720 Warrants exercisable into shares of our common stock and Preferred Stock convertible into 63,724 shares of Common Stock, for gross proceeds of $9.4 million before consideration of issuance costs, associated with the issuance of the Units, with $3.1 million allocated to the Preferred Stock (with no issuance costs allocated to the preferred stock) and $5.1 million, net of issuance costs of approximately $1.2 million, allocated to the Warrants. In association with the Warrants that were recorded as a derivative liability, the Company immediately expensed approximately all $1.2 million of the issuance costs.

During the year ended December 31, 2021, Series B Convertible Preferred stockholders of the Company converted no shares of Series B Convertible Preferred Stock, and Series C Convertible Preferred stockholders of the Company converted no shares of Series C Convertible Preferred Stock.

Also, during the year ended December 31, 2021, holders of warrants elected to exercise the warrants using both the cashless and cash options. The cashless exercise option exercised 27 warrants, which resulted in the issuance of 19 shares of common stock. The cash option exercised 1,303warrants, which resulted in the issuance of 1,303 shares of common stock, and the receipt of $0.2 million of cash.

2020 Registered Direct Offerings

During June 2020, the Company closed two registered direct offerings of shares of its common stock, priced at-the-market under Nasdaq rules, resulting in the issuance of a total of 61,000 shares of its common stock for gross proceeds of approximately $9.6 million, before considering offering costs of approximately $0.8 million. On June 23, 2020, the Company entered into the first Share Purchase Agreement with certain institutional purchasers, pursuant to which the Company agreed to issue and sell to the purchasers, in

a registered direct offering, an aggregate of 37,000 shares of common stock, par value $0.01 per share. The shares were sold at a negotiated purchase price of $150 per share for aggregate gross proceeds to the Company of approximately $5.5 million, before deducting offering costs. Following the initial registered direct offering, on June 26, 2020, the Company entered into the second Share Purchase Agreement with certain institutional purchasers pursuant to which the Company offered to the purchasers, in a registered direct offering, an aggregate of 24,000 shares of common stock, par value $0.01 per share. The shares were sold at a negotiated purchase price of $172 per share for aggregate gross proceeds to the Company of approximately $4.1 million, before deducting offering costs.

During July and August 2020, the Company closed two registered direct offerings of shares of its common stock, priced at-the-market under Nasdaq rules, resulting in the issuance of a total of 49,150 shares of its common stock for gross proceeds of approximately $11.2 million, before considering offering costs of approximately $0.8 million. On July 16, 2020, the Company entered into a Share Purchase Agreement with certain institutional purchasers, pursuant to which the Company agreed to issue and sell to the purchasers, in a registered direct offering, an aggregate of 15,000 shares of common stock, par value $0.01 per share. The shares were sold at a negotiated purchase price of $200 per share for aggregate gross proceeds to the Company of $3.0 million, before deducting offering costs. On August 4, 2020, the Company entered into a Share Purchase Agreement with certain institutional purchasers, pursuant to which the Company agreed to issue and sell to the purchasers, in a registered direct offering, an aggregate of 34,150 shares of common stock, par value $0.01 per share. The shares were sold at a negotiated purchase price of $240 per share for aggregate gross proceeds to the Company of $8.2 million, before deducting offering costs.

9. Stock-Based Compensation

During the year ended December 31, 2020, the shareholders approved the 2020 Equity Incentive Plan. The 2020 Plan provides for the grant of nonqualified stock options, incentive stock options, restricted stock, restricted stock units, stock appreciation rights (SARs), and performance share awards to employees, officers, consultants, advisors, non-employee directors and independent contractors designated by either the board of directors of the Company or if so authorized by the board of directors, the Compensation Committee (the "Committee") of the board of directors. Under the 2020 Plan, the maximum number of shares of common stock which may be issued is 19,025 shares of common stock, which includes 25 shares that have been rolled over from our 2012 Plan, as amended.

A summary of the Company's outstanding stock option activity for the years ended December 31, 2021 and 2020 is as follows:

	December 31, 2021			
	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Intrinsic Value
As of December 31, 2020	4,654	$ 553	9.3	511,518
Granted	3,685	193	10.0	-
Exercised	-	-	-	-
Forfeited	-	-	-	-
Expired	-	-	-	-
As of December 31, 2021	8,339	$ 391	8.7	$ 87,553
Exercisable at December 31, 2021	2,682	$ 1,004	8.3	$ 46,449
Vested and expected to vest at December 31, 2021	8,303	$ 391	8.7	$ 86,703

	December 31, 2020			
	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Intrinsic Value
As of December 31, 2019	4	$ 744,669	5.3	-
Granted	4,650	5	10.0	-
Exercised	-	-	-	-
Forfeited	-	-	-	-
Expired	-	-	-	-
As of December 31, 2020	4,654	$ 553	9.3	$ 511,518
Exercisable at December 31, 2020	4	$ 697,742	4.3	$ -
Vested and expected to vest at December 31, 2020	4,654	$ 553	9.3	$ 511,518

The Company estimates the fair value of each stock option on the grant date using the Black-Scholes-Merton valuation model, which requires several estimates including an estimate of the fair value of the underlying common stock on grant date. The expected volatility was based on an average of the historical volatility of the Company. The expected term was contractual life of option. The risk-free interest rate was based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the option. The following weighted average assumptions were used in the calculation to estimate the fair value of options granted to employees and non-employees during the year ended December 31, 2021.

	Year Ended December 31, 2021
Weighted-average risk-free interest rate	0.73%-0.85%
Weighted-average expected life (in years)	5.3-5.9
Expected dividend yield	-%
Weighted-average expected volatility	138%-139%

Of the 3,685 options granted during 2021, 600 were to non-employees.

Unrecognized stock-based compensation as of December 31, 2021, is as follows (in thousands):

	Unrecognized Stock-Based	Weighted Average Remaining of Recognition

	Compensation	(in years)
Stock options	$ 531	1.9
Stock grants	11	1.3

10. Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes.

The following is a reconciliation of the expected statutory federal income tax provision to the actual income tax expense:

	December 31,	
	2021	2020
Federal statutory rate	(21.0)%	(21.0)%
State taxes, net of federal benefit	(4.7)%	(4.4)%
Equity related expenses	(1.7)%	(2.6)%
Tax exempt income	(2.2)%	-%
Change in valuation allowance	29.6%	28.0%
Total income tax expense	0.0%	0.0%

Significant components of the Company's deferred tax assets and liabilities were as follows (in thousands):

	December 31,	
	2021	2020
Deferred tax assets:		
Net operating loss carryforwards	$ 52,559	$ 50,005
Stock-based compensation	3,006	2,929
Federal R&D credit	2,222	2,222
Accrued expenses	156	135
Intangibles	216	103
Right of use asset/liabilities	3	-
Total deferred tax assets	58,162	55,394
Deferred tax liabilities:		
Depreciation	(221)	(29)
Right of Use Asset/Liabilities	-	(11)
Total deferred tax liabilities	(221)	(40)
Less valuation allowance	(57,941)	(55,354)
Net deferred tax liability	$ -	$ -

	December 31,	
	2021	2020
Pre-tax book income tax at statutory rate	$ (1,843)	$ (1,476)
State taxes, net of federal benefit	(409)	(312)
Return to provision	-	1
Equity related expenses	(146)	(182)
Change in valuation allowance	2,587	1,970
Other	189	(1)
Total income tax expense	$ -	$ -

As of December 31, 2021 and 2020, the Company had net operating loss carryforwards for federal and state income tax purposes of approximately $210.7million and $200.4 million, respectively. The federal and state net operating loss carryforwards will expire from 2023 to 2037 unless previously utilized Additionally, the Company believes an ownership change has occurred that would trigger the limitation on usage of net operating losses imposed by Internal Revenue Code section 382. Because of this limitation, a significant portion of the net operating losses would more likely than not expire unused.

During the years ended December 31, 2021 and 2020, the Company recognized no amounts related to interest or penalties related to uncertain tax positions. The Company is subject to taxation in the United States and various state jurisdictions. The Company currently has no years under examination by any jurisdiction.

A valuation allowance has been established as realization of such deferred tax assets has not met the more likely-than-not threshold requirement. If the Company's judgment changes and it is determined that the Company will be able to realize these deferred tax assets, the tax benefits relating to any reversal of the valuation allowance on deferred tax assets will be accounted for as a reduction to income tax expense. The tax valuation allowance increased by approximately $2.6 million and $2.0 million for the years ended December 31, 2021 and 2020, respectively.

11. Commitment and Contingencies

The Company has executed agreements with certain executive officers of the Company which, upon the occurrence of certain events related to a change in control, call for payments to the executives up to three times their annual salary and accelerated vesting of previously granted stock options.

From time to time, the Company is subject to various claims and legal proceedings covering matters that arise in the ordinary course of its business activities. Management believes any liability that may ultimately result from the resolution of these matters will not have a material adverse effect on the Company's consolidated financial position, operating results or cash flows.

12. 401(k) Plan

Effective June 1, 2004, the Company adopted a defined contribution retirement plan under Section 401(k) of the Internal Revenue Code. The plan covers substantially all employees. Eligible employees may contribute amounts to the plan, via payroll withholdings, subject to certain limitations. The plan permits, but does not require, additional matching contributions to the plan by the Company on behalf of the participants in the plan. The Company incurred approximately $0.1 million relating to retirement contributions for each of the years ended December 31, 2021 and 2020.

13. Note Receivable

On October 1, 2018, the Company completed the sale of its spine implant business to CTL Medical. The sale included a $6.0 million noninterest bearing note receivable payable over a 36 month term to mature on October 1, 2021. The note receivable included an imputed interest rate of 10%. The note was paid in full in May 2021.

14. Leases

The Company has entered into two operating leases from which it conducts its business.

With respect to SINTX operations, the Company leases 29,534 square feet of office, warehouse and manufacturing space under a single operating lease. This lease expires at the end of 2024. The lease has two five-year extension options.

On August 19, 2021, the Company, on behalf of SINTX Armor, entered into an Industrial Lease Agreement (the "SINTX Armor Lease") pursuant to which the Company has agreed to lease approximately 10,936 square feet of office and manufacturing space from which SINTX Armor will conduct its operations. The term of the SINTX Armor Lease is 122 months through October 2031.

Leases with an initial term of 12 months or less are not recorded on the balance sheet. Lease expense is recognized on a straight-line basis over the term of the lease. The Company accounts for lease components separately from the non-lease components. The depreciable life of the assets and leasehold improvements are limited by the expected lease term.

As of December 31, 2021, the operating lease right-of-use assets totaled approximately $2.4million and the operating lease liability totaled approximately $2.4 million. Non-cash operating lease expense during the year ended December 31, 2021, totaled approximately $0.5 million. As of December 31, 2021, the weighted-average discount rate for the Company's operating lease was 6.5%.

Operating lease future minimum payments together with the present values as of December 31, 2021, are summarized as follows:

	December 31, 2021
2022	$ 641
2023	660
2024	679
2025	123
2026	127
Beyond	669
Total future minimum lease payments	2,899
Less amounts representing interests	(501)
Present value of lease liability	2,398
Current-portion of operating lease liability	500
Long-term portion operating lease liability	$ 1,898

15. Subsequent Events

Federal Grant

On March 9, 2022, the Company was notified by the National Institutes of Health (NIH) of the awarding of a $300k grant to the Company to develop, design, and characterize 3D printed implants for craniomaxillofacial applications using a composite of silicon nitride and polyetherketoneketone. This grant will be in addition to the $308k awarded by the NIH to the company in November of 2021.

On June 30, 2022, the Company entered into and closed a Stock Purchase Agreement (the "Purchase Agreement") pursuant to which the Company acquired all of the outstanding shares of common stock of Technology Assessment and Transfer, Inc. (TA&T), a corporation organized under the Laws of the State of Maryland. As a result, TA&T is a wholly owned subsidiary of the Company. The Purchase Agreement sets forth approximately $760,000, including accrued interest, in loan obligations that the Company agreed to assume in connection with the purchase. Further, the Purchase Agreement provides for potential earnout payments to the sellers on the achievement of certain pre-determined gross revenue targets by TA&T for calendar years 2022 and 2023. Earnouts, if any, will be expensed as incurred, as management does not expect the earnouts to be achieved.

On October 17, 2022, the Company completed a rights offering (the "Rights Offering") to holders of the Company's common stock, Series B Preferred Shares, Series C Preferred Shares, and warrants issued March 6, 2018, May 8, 2018, May 14, 2018, and February 6, 2020 (collectively, the "Security Holders") for subscriptions of 4,656 rights resulting in gross proceeds to the Company of approximately $4.7 million. Under the Rights Offering, the Company distributed to the Security Holders, at no charge, one non-transferable subscription right for each share of common stock, share of Series B Preferred Stock, share of Series C Preferred Stock, and each participating warrant (on an as-if-converted-to-common-stock basis) held on the record date, September 23, 2022. Each right entitled the holder to purchase one unit, at a subscription price of $1,000 per unit, consisting of (i) one share of Series D Convertible Preferred Stock with a face value of $1,000 (and immediately convertible into shares of SINTX's common stock at a conversion price equal to $15.102 (the "Conversion Price")), (ii) 27 common stock purchase warrants expiring five years from the date of issuance, which we refer to as the Class A Warrants, and (iii) 27 common stock purchase warrants expiring three years from the date of issuance, which we refer to as the Class B Warrants and, together with the Class A Warrants, the Warrants, with each warrant exercisable for one share of common stock at an exercise price of $9.21 per share.

On December 20, 2022, the Company effected a 1 for 100 reverse stock split of the Company's common stock. The par value and the authorized shares of the common stock and preferred stock were not adjusted as a result of the reverse stock split. All common stock shares, equivalents, and per-share amounts for all periods presented in these consolidated financial statements have been adjusted retroactively to reflect the reverse stock split.

Condensed Consolidated Balance Sheets - Unaudited
(in thousands, except share and per share data)

	September 30, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 4,779	$ 14,273
Account and other receivables, net of allowance	230	102
Prepaid expenses and other current assets	667	350
Inventories	326	303
Other current assets	46	-
Total current assets	6,048	15,028
Inventories	423	294
Property and equipment, net	5,493	4,025
Intangible assets, net	27	31
Operating lease right of use asset	2,491	2,385
Other long-term assets	81	77
Total assets	$ 14,563	$ 21,840
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 289	$ 242
Accrued liabilities	1,554	1,150
Current portion of debt	5	509
Current portion of related party debt	163	-
Derivative liabilities	139	347
Current portion of operating lease liability	720	500
Other current liabilities	2	-
Total current liabilities	2,872	2,748
Debt, net of current portion	393	-
Related party debt, net of current portion	72	-
Operating lease liability, net of current portion	1,811	1,898
Total liabilities	5,148	4,646
Commitments and Contingencies		
Stockholders' Equity:		
Convertible preferred stock Series B, $0.01 par value, 130,000,000 total shares authorized inclusive of all series of preferred; 26 shares issued and outstanding as of September 30, 2022 and December 31, 2021.	-	-
Convertible preferred stock Series C, $0.01 par value, 130,000,000 total shares authorized inclusive of all series of preferred; 50 and 51 shares issued and outstanding as of September 30, 2022 and December 31, 2021 respectively.	-	-
Common stock, $0.01 par value, 250,000,000 shares authorized; 247,292 and 247,105 shares issued and outstanding as of September 30, 2022 and December 31, 2021, respectively.	3	3
Additional paid-in capital	267,910	267,608
Accumulated deficit	(258,498)	(250,417)
Total stockholders' equity	9,415	17,194
Total liabilities and stockholders' equity	$ 14,563	$ 21,840

The condensed consolidated balance sheet as of December 31, 2021, has been prepared using information from the audited consolidated balance sheet as of that date.

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

SINTX Technologies, Inc.
Condensed Consolidated Statements of Operations - Unaudited
(in thousands, except share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Product revenue	$ 173	$ 239	$ 354	$ 441
Grant and contract revenue	253	-	442	-
Total revenue	426	239	796	441
Costs of revenue	89	190	235	324
Gross profit	337	49	561	117
Operating expenses:				
Research and development	1,523	1,603	4,651	4,402
General and administrative	1,069	933	2,918	2,791
Sales and marketing	291	338	1,023	953
Grant and contract expenses	247	-	423	-
Total operating expenses	3,130	2,874	9,015	8,146
Loss from operations	(2,793)	(2,825)	(8,454)	(8,029)

Other income (expenses):				
Interest expense	(4)	(1)	(12)	(2)
Interest income	5	3	8	99
Loss on disposal of assets	-	-	(1)	-
Change in fair value of derivative liabilities	60	481	208	225
Forgiveness of PPP loan	-	-	-	391
Other income, net	8	(1)	170	141
Total other income (expense), net	69	482	373	854
Net loss before income taxes	(2,724)	(2,343)	(8,081)	(7,175)
Provision for income taxes	-	-	-	-
Net loss	$ (2,724)	$ (2,343)	$ (8,081)	$ (7,175)
Net loss per share - basic and diluted				
Basic - net loss	$ (11)	$ (9)	$ (33)	$ (29)
Diluted - net loss	$ (11)	$ (11)	$ (33)	$ (29)
Weighted average common shares outstanding:				
Basic	247,248	247,032	247,179	246,865
Diluted	250,870	250,693	250,840	250,971

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

SINTX Technologies, Inc.
Condensed Consolidated Statements of Stockholders' Equity - Unaudited
(in thousands, except share and per share data)

	Preferred B Stock		Preferred C Stock		Common Stock		Paid-In	Accumulated	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Equity
Balance as of December 31, 2020	26	$ -	51	$ -	245,524	$ 3	$ 266,908	$ (241,107)	$ 25,804
Stock based compensation	-	-	-	-	-	-	36	-	36
Extinguishment of derivative liability upon exercise of warrant	-	-	-	-	-	-	195	-	195
Issuance of common stock upon exercise of warrants for cash	-	-	-	-	1,303	-	196	-	196
Issuance of common stock from the cashless exercise of warrants	-	-	-	-	19	-	-	-	-
Net loss	-	-	-	-	-	-	-	(2,633)	(2,633)
Balance as of March 31, 2021	26	-	51	-	246,846	3	267,335	(243,740)	23,598
Stock based compensation	-	-	-	-	155	-	80	-	80
Net loss	-	-	-	-	-	-	-	(2,199)	(2,199)
Balance as of June 31, 2021	26	-	51	-	247,001	3	267,415	(245,939)	21,479
Stock based compensation	-	-	-	-	60	-	104	-	104
Net loss	-	-	-	-	-	-	-	(2,343)	(2,343)
Balance as of September 30, 2021	26	$ -	51	$ -	247,061	$ 3	$ 267,519	$ (248,282)	$ 19,240

	Preferred B Stock		Preferred C Stock		Common Stock		Paid-In	Accumulated	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Equity
Balance as of December 31, 2021	26	$ -	51	$ -	247,105	$ 3	$ 267,608	$ (250,417)	$ 17,194
Stock based compensation	-	-	-	-	30	-	102	-	102
Net loss	-	-	-	-	-	-	-	(2,845)	(2,845)
Balance as of March 31, 2022	26	-	51	-	247,135	3	267,710	(253,262)	14,451
Stock based compensation	-	-	-	-	60	-	88	-	88
Acquisition of subsidiary	-	-	-	-	-	-	22	-	22
Net loss	-	-	-	-	-	-	-	(2,512)	(2,512)
Balance as of June 30, 2022	26	-	51	-	247,195	3	267,820	(255,774)	12,049
Stock based compensation	-	-	-	-	90	-	90	-	90
Common stock issued on conversion of preferred stock	-	-	(1)	-	7	-	-	-	-
Net loss	-	-	-	-	-	-	-	(2,724)	(2,724)
Balance as of September 30, 2022	26	$ -	50	$ -	247,292	$ 3	$ 267,910	$ (258,498)	$ 9,415

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

SINTX Technologies, Inc.
Condensed Consolidated Statements of Cash Flows - Unaudited
(in thousands)

	Nine months Ended September 30,	
	2022	2021
Cash Flow From Operating Activities		
Net loss	$ (8,081)	$ (7,175)
Adjustments to reconcile net loss to net cash used in operating activities:		

Depreciation expense	237	119
Amortization of right of use asset	441	331
Amortization of intangible assets	4	3
Non-cash interest income	-	(88)
Stock based compensation	280	220
Change in fair value of derivative liabilities	(208)	(225)
Forgiveness of PPP loan	-	(391)
Loss (gain) on disposal of property and equipment	1	(144)
Bad debt expense	(2)	-
Changes in operating assets and liabilities:		
Trade accounts receivable	66	(140)
Prepaid expenses and other current assets	(346)	(177)
Inventories	(151)	(203)
Accounts payable and accrued liabilities	25	417
Other liabilities	(32)	-
Payments on operating lease liability	(414)	(294)
Net cash used in operating activities	(8,180)	(7,747)
Cash Flows From Investing Activities		
Purchase of property and equipment	(1,109)	(3,210)
Proceeds from notes receivable, net of imputed interest	-	1,944
Cash acquired in acquisition (see Note 2)	303	-
Proceeds from sale of property and equipment	1	144
Net cash used in investing activities	(805)	(1,122)
Cash Flows From Financing Activities		
Proceeds from issuance of common stock in connection with exercise of warrants	-	196
Proceeds from issuance of debt	-	510
Payments on debt	(509)	(5)
Net cash provided by (used in) financing activities	(509)	701
Net decrease in cash and cash equivalents	(9,494)	(8,168)
Cash and cash equivalents at beginning of period	14,273	25,351
Cash and cash equivalents at end of period	$ 4,779	$ 17,183
Noncash Investing and Financing Activities		
Right-of-Use Assets and assumption of operating lease liability	$ 27	$ 918
Extinguishment of derivative liabilities through exercise of warrants	-	195
Acquisition of subsidiary through assumption of debt (see Note 2)	22	-
Supplemental Cash Flow Information		
Cash paid for interest	$ 32	$ -

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

SINTX TECHNOLOGIES, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. Organization and Summary of Significant Accounting Policies

Organization

The condensed consolidated financial statements include the accounts of SINTX Technologies, Inc. ("SINTX") and its wholly-owned subsidiaries, SINTX Armor, Inc. ("SINTX Armor") and SINTX TA&T, Inc. (TA&T), which are collectively referred to as "we" or "the Company". SINTX was incorporated in the state of Delaware on December 10, 1996 (and was previously known as Amedica Corporation). The Company is an OEM advanced ceramics materials company focused on providing solutions in a variety of medical, industrial, and antipathogenic applications. SINTX is a 25-year-old company that has grown over time from focusing on the research and development of silicon nitride for use in human interbody implants to becoming an advanced ceramics company engaged in many different fields, and this has enabled the Company to focus on core competencies. The core strength of the Company is the manufacturing, research, and development of advanced ceramics for external partners. The Company presently manufactures ceramic powders and components in its Salt Lake City and Maryland facilities. The SINTX Salt Lake City facility is FDA and ANVISA registered, ISO 13485:2016 certified, and ASD9100D certified. The Company's products are primarily sold in the United States.

The Company is focused on building revenue generating opportunities in three business industries - antipathogenic, industrial (including armor), and biomedical - thereby connecting with current and new customers, partners and manufacturers to help realize the goal of leveraging expertise in high-tech ceramics to create new, innovative opportunities across these sectors. We expect our continued investment in research and development to provide additional revenue opportunities.

The Company's initial focus was the development and commercialization of products made from silicon nitride for use in spinal fusion and hip and knee replacement applications. SINTX believes it is the first and only manufacturer to use silicon nitride in medical applications primarily focused on spine fusion therapies. Since then, we have developed other applications for our silicon nitride technology as well as utilized our expertise in the use of ceramic materials in other applications. In July 2021, the Company acquired the equipment and obtained certain proprietary know-how rights with which it intends to develop, manufacture, and commercialize protective armor from boron carbide and a composite material of silicon carbide and boron carbide for military, law enforcement and civilian uses. The protective armor operations are housed in SINTX Armor. In June 2022, the Company acquired Technology Assessment and Transfer, Inc. (TA&T), a nearly 40-year-old business with a mission to transition advanced materials and process technologies from a laboratory environment to commercial products and services (see Note 2).

On October 1, 2018, the Company completed the sale of its retail spine business to CTL Medical, a Dallas, Texas-based privately held medical device manufacturer. As a result of the sale, CTL Medical became the exclusive owner of the Company's portfolio of metal and silicon nitride spine products, as well as access to future silicon nitride spine technologies developed by the Company. The Company's name, Amedica, was also transferred to CTL Medical, which is now CTL Amedica. The Company serves as CTL's exclusive OEM provider of silicon nitride products. Manufacturing, R&D, and all intellectual property related to the core, non-spine, biomaterial technology including silicon nitride remains with the Company.

On October 30, 2018, the Company amended its Certificate of Incorporation with the State of Delaware to change its corporate name to SINTX Technologies, Inc. The Company also changed its trading symbol on the NASDAQ Capital Market to "SINT".

The Company's new corporate brand reflects both the Company's core competence in the research, development and manufacturing of silicon nitride ceramics and other

ceramics, as well as encouraging prospects for the future, as an OEM supplier of spine implants to CTL Amedica, and multiple opportunities outside of spine.

Basis of Presentation

These unaudited condensed consolidated financial statements have been prepared in accordance with the rules and regulations of the United States Securities and Exchange Commission ("SEC") and include all assets and liabilities of the Company.

SEC rules and regulations allow the omission of certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") so long as the statements are not misleading. In the opinion of management, these financial statements and accompanying notes contain all adjustments (consisting of normal recurring adjustments) necessary to present fairly the financial position and results of operations for the periods presented herein. These condensed consolidated financial statements should be read in conjunction with the consolidated audited financial statements and notes thereto contained in the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 25, 2022. The results of operations for the nine months ended September 30, 2022, are not necessarily indicative of the results to be expected for the year ending December 31, 2022. The Company's significant accounting policies are set forth in Note 1 to the consolidated financial statements for the year ended December 31, 2021.

Use of Estimates

The preparation of condensed consolidated financial statements in conformity with U.S. 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 condensed consolidated financial statements and the reported amounts of revenue and expenses during the period. Actual results could differ from those estimates. As of September 30, 2022, the most significant estimate relates to derivative liabilities relating to common stock warrants.

Liquidity and Capital Resources

The condensed consolidated financial statements have been prepared assuming the Company will continue to operate as a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business, and does not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result from uncertainty related to its ability to continue as a going concern within one year from the date of issuance of these condensed consolidated financial statements.

For the nine months ended September 30, 2022, and 2021, the Company incurred a net loss of $8.1 million and $7.2 million, respectively, and used cash in operating activities of $8.2 million and $7.7 million, respectively. The Company had an accumulated deficit of $258.5 million and $250.4 million as of September 30, 2022, and December 31, 2021, respectively. To date, the Company's operations have been principally financed from proceeds from the issuance of preferred and common stock and, to a lesser extent, cash generated from product sales. It is anticipated that the Company will continue to generate operating losses and use cash in operating activities. The Company's continuation as a going concern is dependent upon its ability to increase sales, and/or raise additional funds through the capital markets. Whether and when the Company can attain profitability and positive cash flows from operations or obtain additional financing is uncertain.

The Company is actively generating additional scientific and clinical data to have it published in leading industry publications. We believe the publication of such data would help sales efforts as the Company approaches new prospects. The Company continues to make changes to the sales strategy, including a focus on revenue growth by expanding the use of silicon nitride in other areas outside of spinal fusion applications. The Company has also acquired equipment and certain proprietary know-how for the purpose of developing, manufacturing and commercializing armored plates made from boron carbide and a composite of boron carbide and silicon carbide for military, law enforcement and other civilian uses. We also expect the acquisition of TA&T will further broaden the Company's sources of revenue.

The Company has common stock that is publicly traded and has been able to successfully raise capital when needed since the date of the Company's initial public offering in February 2014. On January 3, 2022, the Company received a notice from Nasdaq Listing Qualifications department (the "Staff") of the Nasdaq Stock Market LLC ("Nasdaq") stating that the bid price of the Company's common stock for the last 30 consecutive trading days had closed below the minimum $1.00 per share required for continued listing under Listing Rule 5550(a)(2). The Nasdaq notification letter does not result in the immediate delisting of the Company's common stock, and the stock will continue to trade uninterrupted on the The Nasdaq Capital Market under the symbol "SINT". The letter from the Staff further indicated that if the Company did not regain compliance with Rule 5550(a)(2) by July 5, 2022, the Company may be eligible for additional time to regain compliance. On July 6, 2022, the Company received notice from the Staff that the Company was eligible for an additional 180 calendar day period, or until January 2, 2023, to regain compliance. Delisting of the Company's shares of common stock from The Nasdaq Capital Market may adversely impact its ability to raise capital on the public markets. On December 20, 2022, the Company effected a 1 for 100 reverse stock split of the Company's common stock. The par value and the authorized shares of the common and preferred stock were not adjusted as a result of the reverse stock split. All common stock shares, equivalents, and per-share amounts for all periods presented in these consolidated financial statements have been adjusted retroactively to reflect the reverse stock split.

On February 25, 2021, the Company entered into an Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim Group LLC ("Maxim"), pursuant to which the Company may sell from time to time, shares of the Company's common stock having an aggregate offering price of up to $2.0 million through Maxim, as agent.

Subject to the terms and conditions of the 2021 Distribution Agreement, Maxim will use its commercially reasonable efforts to sell the Shares from time to time, based on our instructions. Under the 2021 Distribution Agreement, Maxim may sell the Shares by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including, without limitation, sales made directly on the Nasdaq Capital Market. We have no obligation to sell any shares under the ATM and may at any time suspend offers under the 2021 Distribution Agreement. The Offering will terminate upon the earlier of (i) the sale of shares having an aggregate offering price of $2.0 million, (ii) the termination by either Maxim or the Company upon the provision of fifteen (15) days written notice, or (iii) February 25, 2023. Under the terms of the 2021 Distribution Agreement, Maxim will be entitled to a transaction fee at a fixed rate of 2.0% of the gross sales price of Shares sold under the 2021 Distribution Agreement. The Company will also reimburse Maxim for certain expenses incurred in connection with the 2021 Distribution Agreement and agreed to provide indemnification and contribution to Maxim with respect to certain liabilities under the Securities Act and the Securities Exchange Act of 1934, as amended. As of September 30, 2022, there have been no sales of shares of common stock under the 2021 Distribution Agreement.

On October 17, 2022, the Company closed on the sale of 4,656 Units for gross proceeds of approximately $4.7 million pursuant to the terms of a Rights Offering to holders of the Company's common stock, Series B and Series C preferred stock and holders of certain outstanding common stock warrants. See Subsequent Events below for a more detailed discussion of the Rights Offering.

Although the Company is seeking to obtain additional equity and/or debt financing, such funding is not assured and may not be available to the Company on favorable or acceptable terms and may involve significant restrictive covenants. Any additional equity financing is also not assured and, if available to the Company, will most likely be dilutive to its current stockholders. If the Company is not able to obtain additional debt or equity financing on a timely basis, the impact on the Company will be material and adverse.

These uncertainties create substantial doubt about our ability to continue as a going concern. The condensed consolidated financial statements do not include any adjustments

that might result from the outcome of these uncertainties.

Risks Related to COVID-19 Pandemic

The COVID-19 pandemic is affecting the United States and global economies and may affect the Company's operations and those of third parties on which the Company relies. In response to the spread of COVID-19 and to ensure safety of employees and continuity of business operations, we temporarily restricted access to the Salt Lake City facility, with our administrative employees continuing their work remotely and limited the number of staff in our manufacturing facility. We implemented protective measures such as wearing of face masks, maintaining social distancing, and additional cleaning. Beginning in 2021, we have offered vaccination incentives. While the potential economic impact brought by, and the duration of, the COVID-19 pandemic is difficult to assess or predict, the impact of the COVID-19 pandemic on the global financial markets may reduce the Company's ability to access capital, which could negatively impact the Company's short-term and long-term liquidity. The ultimate impact of the COVID-19 pandemic is highly uncertain and subject to change. The Company does not yet know the full extent of potential delays or impacts on its business, financing or other activities or on healthcare systems or the global economy as a whole. However, these effects could have a material impact on the Company's liquidity, capital resources, operations and business and those of the third parties on which we rely.

Grant Revenue

Revenues from grants, contracts, and awards provided by governmental agencies are recorded based upon the terms of the specific grant agreements, which generally provide that revenue is earned when the allowable costs specified in the applicable grant agreement have been incurred. Cash received from federal grants and awards can be subject to audit by the grantor and, if the examination results in a disallowance of any expenditure, repayment could be required.

Grant, contract, and award receivables relate to allowable amounts expended or otherwise incurred in connection with the terms of a grant or award and for which reimbursement or draw upon the grant funds have not yet taken place.

Correction of an Immaterial Error

During the first quarter 2022, the Company identified an error related to the removal of a loan obligation and the recording of other income for forgiveness of debt totaling approximately $0.5 million, which forgiveness was recorded on November 24, 2021. The Company has determined that the Company should not have removed the loan obligation and recorded approximately $0.5 million of other income in the financial statements as of December 31, 2021, and for the year then ended. The error affected the 2021 net loss attributable to common stockholders and net loss per share-basic and diluted. The error also affected total liabilities and accumulated deficit (and total stockholders' equity) as of December 31, 2021. The error did not affect 2021 cash flows from operating activities and total cash flow.

In accordance with the SEC Staff Accounting Bulletin (SAB) No. 99, "Materiality," and SAB No. 108, "Considering the Effects of Prior Year Misstatements when Quantifying Misstatements in Current Year Financial Statements," the Company evaluated the materiality of the error from qualitative and quantitative perspectives and concluded that the error was immaterial to the March 31, 2022 and December 31, 2021, financial statements. Consequently, only the December 31, 2021, consolidated balance sheet and the December 31, 2021, balance in the statement of stockholders' equity contained in these financial statements have been restated. The change resulted a reduction of stockholders' equity of $0.5 million as of December 31, 2021.

New Accounting Pronouncements Not Yet Adopted

In August 2020, the Financial Statement Accounting Board (the "FASB") issued ASU 2020-06 which simplifies the accounting for convertible instruments and its application of the derivatives scope exception for contracts in an entity's own equity. For contracts in an entity's own equity, the new guidance eliminates some of the current requirements for equity classification such as the requirement that settlement in unregistered shares is permitted. In addition, the new guidance reduces the number of accounting models that require separating embedded conversion features from convertible instruments, including eliminating the requirement to recognize a beneficial conversion feature if the conversion feature is in the money and does not require bifurcation as a derivative liability. As a result, only conversion features accounted for under the substantial premium model and those that require bifurcation will be accounted for separately. The guidance also addresses how convertible instruments are accounted for in the diluted earnings per share calculation and requires enhanced disclosures about the terms of convertible instruments and contracts in an entity's own equity. The guidance is effective for the Company for annual periods beginning after December 15, 2023, and interim periods within that year, with early adoption permitted. The Company plans to adopt the new standards January 1, 2023. The adoption of this standard will result in certain warrants currently classified as fair value liabilities to be reclassified within stockholder's equity. We are currently assessing any other impact that adoption will have on our financial position and results of operations.

The Company has reviewed all other recently issued, but not yet adopted, accounting standards, in order to determine their effects, if any, on its results of operations, financial position or cash flows. Based on that review, the Company believes that no other pronouncements will have a significant effect on its financial statements.

2. Business Acquisition

On June 30, 2022, the Company entered into and closed a Stock Purchase Agreement (the "Purchase Agreement") pursuant to which the Company acquired all of the outstanding shares of common stock of Technology Assessment and Transfer, Inc. (TA&T), a corporation organized under the Laws of the State of Maryland. As a result, TA&T is a wholly owned subsidiary of the Company.

The Purchase Agreement sets forth approximately $760,000, including accrued interest, in loan obligations that the Company agreed to assume in connection with the purchase. Further, the Purchase Agreement provides for potential earnout payments to the sellers on the achievement of certain pre-determined gross revenue targets by TA&T for calendar years 2022 and 2023. Earnouts, if any, will be expensed as incurred , as management does not expect the earnouts to be achieved.

The following table summarizes the purchase price allocation (in thousands):

	June 30, 2022
Assets	
Current assets	
Cash and cash equivalents	$ 303
Accounts and other receivables, net of allowance	193
Prepaid expenses and other receivables, net of allowance	14
Total current assets	510
Property and equipment, net	599
Operating lease right of use asset	521
Other long-term assets	7

Total assets	1,637
Liabilities and net assets acquired	
Current liabilities	
Accounts payable	105
Accrued liabilities	241
Current portion of debt	6
Current portion of related party debt	242
Current portion of operating lease liability	179
Total current liabilities	773
Debt, net of current portion	393
Related party debt, net of current portion	107
Operating lease liability, net of current portion	342
Total liabilities	1,615
Net assets acquired	$ 22

The following proforma unaudited revenue and net loss are presented as if the acquisition had been included in the consolidated results of the Company for the nine months ended September 30, 2022 (in thousands).

	Nine Months Ended September 30, 2022
Revenue	$ 1,385
Net loss	$ (8,097)

No amounts are included in the condensed consolidated statement of operations relating to TA&T for the six months ended June 30, 2022, as the transaction was closed the end of day June 30, 2022. TA&T's operations are included in the Company's condensed consolidated statement of operations beginning July 1, 2022.

3. Basic and Diluted Net Loss per Common Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of common shares outstanding for the period, without consideration for common stock equivalents. Diluted net loss per share is calculated by dividing the net loss by the weighted-average number of common share equivalents outstanding for the period that are determined to be dilutive. Common stock equivalents are primarily comprised of preferred stock and warrants for the purchase of common stock. For the nine months ended September 30, 2022, there is no difference in the number of shares and net loss used to calculate basic and diluted shares outstanding because their effect would have been anti-dilutive. The Company had potentially dilutive securities, totaling approximately 24,000 and 18,000 as of September 30, 2022, and 2021, respectively.

Below are basic and diluted loss per share data for the three months ended September 30, 2022, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (2,724)	$ (60)	$ (2,784)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (2,724)	$ (60)	$ (2,784)
Denominator:			
Number of shares used in per common share calculations:	247,248	3,622	250,870
Net loss per common share:			
Net loss	$ (11)	$ -	$ (11)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (11)	$ -	$ (11)

Below are basic and diluted loss per share data for the nine months ended September 30, 2022, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (8,081)	$ (208)	$ (8,289)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (8,081)	$ (208)	$ (8,289)
Denominator:			
Number of shares used in per common share calculations:	247,179	3,661	250,840
Net loss per common share:			
Net loss	$ (33)	$ -	$ (33)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (33)	$ -	$ (33)

Below are basic and diluted loss per share data for the three months ended September 30, 2021, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (2,343)	$ (480)	$ (2,823)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (2,343)	$ (480)	$ (2,823)
Denominator:			
Number of shares used in per common share calculations:	247,032	3,661	250,693
Net loss per common share:			
Net loss	$ (9)	$ (2)	$ (11)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (9)	$ (2)	$ (11)

Below are basic and diluted loss per share data for the nine months ended September 30, 2021, which are in thousands except for share and per share data:

	Basic Calculation	Effect of Dilutive Warrant Securities	Diluted Calculation
Numerator:			
Net loss	$ (7,175)	$ (225)	$ (7,400)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (7,175)	$ (225)	$ (7,400)
Denominator:			
Number of shares used in per common share calculations:	246,865	4,106	250,971
Net loss per common share:			
Net loss	$ (29)	$ -	$ (29)
Deemed dividend and accretion of a discount	-	-	-
Net loss attributable to common stockholders	$ (29)	$ -	$ (29)

4. Inventories

Inventories consisted of the following (in thousands):

	September 30, 2022	December 31, 2021
Raw materials	$ 509	$ 411
WIP	148	134
Finished goods	92	52
	$ 749	$ 597

As of September 30, 2022, inventories totaling approximately $0.3 million and $0.4 million were classified as current and long-term, respectively. As of December 31, 2021, inventories totaling approximately $0.3 million and $0.3 million were classified as current and long-term, respectively. Inventories classified as current represent the carrying value of inventories as of September 30, 2022, that management estimates will be sold or used by September 30, 2023.

5. Fair Value Measurements

Financial Instruments Measured and Recorded at Fair Value on a Recurring Basis

The Company has issued certain warrants to purchase shares of common stock, which are considered derivative liabilities because they have registration rights which could require a cash settlement and are re-measured to fair value at each reporting period in accordance with accounting guidance. Fair value is based on the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, under a three-tier fair value hierarchy which prioritizes the inputs used in measuring fair value as follows:

Level 1 - quoted market prices for identical assets or liabilities in active markets.

Level 2 - observable prices that are based on inputs not quoted on active markets but corroborated by market data.

Level 3 - unobservable inputs reflecting management's assumptions, consistent with reasonably available assumptions made by other market participants. These valuations require significant judgment.

The Company classifies assets and liabilities measured at fair value in their entirety based on the lowest level of input that is significant to their fair value measurement. No financial assets were measured on a recurring basis as of September 30, 2022, and December 31, 2021. The following tables set forth the financial liabilities measured at fair value on a recurring basis by level within the fair value hierarchy as of September 30, 2022, and December 31, 2021 (in thousands):

	Fair Value Measurements as of September 30, 2022			
Description	**Level 1**	**Level 2**	**Level 3**	**Total**
Derivative liability				
Common stock warrants	$ -	$ -	$ 139	$ 139

	Fair Value Measurements as of December 31, 2021			
Description	**Level 1**	**Level 2**	**Level 3**	**Total**
Derivative liability				
Common stock warrants	$ -	$ -	$ 347	$ 347

The Company did not have any transfers of assets and liabilities between Level 1 and Level 2 of the fair value measurement hierarchy during the nine months ended September 30, 2022, and 2021. The following table presents a reconciliation of the derivative liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) during the nine months ended September 30, 2022, and 2021 (in thousands):

	Common Stock Warrants
Balance as of December 31, 2020	$ (1,238)
Change in fair value	225
Exercise of warrants	195
Balance as of September 30, 2021	$ (818)
Balance as of December 31, 2021	$ (347)
Change in fair value	208
Balance as of September 30, 2022	$ (139)

Common Stock Warrants

The Company has issued certain warrants to purchase shares of common stock, which are considered derivative liabilities because they have registration rights which could require a cash settlement and are re-measured to fair value at each reporting period in accordance with accounting guidance. As of September 30, 2022, and December 31, 2021, the derivative liability was calculated using the Monte Carlo Simulation valuation.

The assumptions used in estimating the common stock warrant liability as of September 30, 2022, and December 31, 2021 were as follows:

	September 30, 2022	December 31, 2021
Weighted-average risk-free interest rate	3.33%-4.22%	0.06%-0.97%
Weighted-average expected life (in years)	0.32-2.36	0.07-3.10
Expected dividend yield	-%	-%
Weighted-average expected volatility	81.9%-121.7%	71.5%-126.5%

Other Financial Instruments

The Company's recorded values of cash and cash equivalents, account and other receivables, accounts payable and accrued liabilities approximate their fair values based on their short-term nature. The recorded value of notes payable approximates the fair value as the interest rate approximates market interest rates.

6. Accrued Liabilities

Accrued liabilities consisted of the following (in thousands):

	September 30, 2022	December 31, 2021
Payroll and related expense	$ 673	$ 724
Accrued payables	321	-
Other	560	426
	$ 1,554	$ 1,150

7. Debt

2020 PPP Loan

On April 28, 2020, the Company received funding under a Paycheck Protection Program ("PPP") loan (the "PPP Loan") from First State Community Bank (the "Lender"). The principal amount of the PPP Loan was $0.4 million. The PPP was established under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and is administered by the U.S. Small Business Administration (the "SBA"). Loans made under the PPP may be partially or fully forgiven if the recipient complies with the provisions of the CARES Act, including the use of PPP Loan proceeds for payroll costs, rent, utilities and other expenses, provided that such amounts are incurred during a 24-week period that commenced on April 28, 2020 and at least 60% of any forgiven amount has been used for covered payroll costs as defined by the CARES Act. On January 5, 2021, the Lender provided notice to the Company that the principal amount and accrued interest had been forgiven. The Company removed the PPP Loan obligation and recorded other income for forgiveness of debt totaling $0.4 million. The SBA has until January of 2027 to audit the Company's compliance with the CARES Act relating to the PPP Loan.

2021 PPP Loan

On March 15, 2021, the Company received funding under the SBA Second Draw Program under the Paycheck Protection Program ("2021 PPP") (the "2021 PPP Loan") from the Lender. The principal amount of the 2021 PPP Loan is $0.5 million. The Company received notice on November 24, 2021, that the principal amount and accrued interest had been forgiven. The Company removed the 2021 PPP Loan obligation and recorded other income for forgiveness of debt totaling approximately $0.5 million during the year ended December 31, 2021.

Since receiving the 2021 PPP Loan and learning that the principal amount of the loan and accrued interest had been forgiven, the Company has determined that due to its status as a publicly traded company with shares of common stock trading on the Nasdaq Capital Market it was not eligible to receive a loan under the SBA Second Draw Program under the Paycheck Protection Program. As a result, the Company repaid the loan on June 14, 2022, together with processing fees and interest, which totaled $0.5 million, resulting in no balance outstanding at June 30, 2022 (see Note 1).

Business Loan

On July 20, 2021, TA&T, entered into a Loan Authorization and Agreement in the amount of approximately $350,000 (the "Business Loan"). Under the Business Loan, the Company will make monthly installment payments, including principal and interest, of $1,754. Payments are to begin 18 months from the date of the loan. The balance of principal and interest is payable 30 years from July 20, 2021. The Business Loan bears interest at a rate of 3.75% per annum. The Business Loan is secured by a general security interest in all of the assets of TA&T. The Business Loan contains other standard provisions that are customary of loans of this type.

Related Party Debt

TA&T is obligated to repay certain personal loans made by the founders of TA&T to TA&T prior to SINTX's acquisition of TA&T (the Personal Loans"). The total amount of the Personal Loans at September 30, 2022 was approximately $350,000. The Company agreed to repay the outstanding balance of the Personal Loans in (i) 24 equal monthly installments beginning September 1, 2022 and each month thereafter until paid in full as one prior owner's portion of the Personal Loans totaling $157,000, and (ii) for the other owner's portion of the Personal Loans totaling $193,000. As of September 30, 2022, the related party debt had an outstanding balance of $235,000. The outstanding balance is being paid in monthly installments ending August 1, 2024. The related party debt is not collateralized and has no interest rate.

Wells Fargo Line of Credit

Prior to SINTX's acquisition of TA&T, TA&T entered into a revolving line of credit with Wells Fargo. As of September 30, 2022, the line of credit with Wells Fargo had an outstanding balance of $47,000.

8. Equity

2021 Equity Distribution Agreement

On February 25, 2021, the Company entered into an Equity Distribution Agreement (the "2021 Distribution Agreement") with Maxim Group LLC ("Maxim"), pursuant to which the Company may sell from time to time, shares of the Company's common stock having an aggregate offering price of up to $2.0 million through Maxim, as agent.

Subject to the terms and conditions of the 2021 Distribution Agreement, Maxim will use its commercially reasonable efforts to sell the Shares from time to time, based on the Company's instructions. Under the 2021 Distribution Agreement, Maxim may sell the Shares by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including, without limitation, sales made directly on the Nasdaq Capital Market. We have no obligation to sell any shares under the 2021 Distribution Agreement and may at any time suspend offers under the 2021 Distribution Agreement. The Offering will terminate upon the earlier of (i) the sale of shares having an aggregate offering price of $2.0 million, (ii) the termination by either Maxim or the Company upon the provision of fifteen (15) days written notice, or (iii) February 25, 2023. Under the terms of the 2021 Distribution Agreement, Maxim will be entitled to a transaction fee at a fixed rate of 2.0% of the gross sales price of Shares sold under the 2021 Distribution Agreement. The Company will also reimburse Maxim for certain expenses incurred in connection with the 2021 Distribution Agreement and agreed to provide indemnification and contribution to Maxim with respect to certain liabilities under the Securities Act and the Securities Exchange Act of 1934, as amended. As of September 30, 2022 there have been no sales of shares of common stock under the 2021 Distribution Agreement.

On October 17, 2022, the Company closed on the sale of 4,656 Units for gross proceeds of approximately $4.7 million pursuant to the terms of a Rights Offering to holders of the Company's common stock, Series B and Series C preferred stock and holders of certain outstanding common stock warrants. See Subsequent Events below for a more detailed discussion of the Rights Offering. See Note 13.

9. Stock-Based Compensation

A summary of the Company's outstanding stock option activity for the three months ended September 30, 2022, and 2021 is as follows:

	September 30, 2022			
	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Intrinsic Value
As of December 31, 2021	8,339	$ 391	8.7	87,553
Granted	3,570	45	10.0	-
Exercised	-	-	-	-
Forfeited	-	-	-	-
Expired	-	-	-	-
As of September 30, 2022	11,908	$ 238	8.4	$ -
Exercisable at September 30, 2022	5,373	$ 464	7.8	$ -
Vested and expected to vest at September 30, 2022	11,051	$ 248	8.4	$ -

	September 30, 2021			
	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Intrinsic Value
As of December 31, 2020	4,654	$ 553	9.3	511,518
Granted	3,685	193	10.0	-
Exercised	-	-	-	-
Forfeited	-	-	-	-
Expired	-	-	-	-
As of September 30, 2021	8,339	$ 398	8.9	$ 417,164
Exercisable at September 30, 2021	2,218	$ 1,226	8.6	$ -
Vested and expected to vest at September 30, 2021	8,339	$ 398	8.9	$ 417,164

The Company estimates the fair value of each stock option on the grant date using the Black-Scholes-Merton valuation model, which requires several estimates including an

estimate of the fair value of the underlying common stock on grant date. The expected volatility was based on an average of the historical volatility of the Company. The expected term was contractual life of option. The risk-free interest rate was based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the option. The following weighted average assumptions were used in the calculation to estimate the fair value of options granted to employees and non-employees during the nine months ended September 30, 2022. During the nine months ended September 30, 2022, the Company granted stock options with an estimated fair value of approximately $0.2 million.

	September 30, 2022
Weighted-average risk-free interest rate	1.70%
Weighted-average expected life (in years)	5.5
Expected dividend yield	-%
Weighted-average expected volatility	131.1%

Of the 3,570 options granted during the nine months ended September 30, 2022, 600 were to non-executive members of the board of directors. Of the 1,190,889 options outstanding as of September 30, 2022, 3,550 were awarded to non-executive members of the board of directors.

Unrecognized stock-based compensation as of September 30, 2022, is as follows (in thousands):

	Unrecognized Stock-Based Compensation	Weighted Average Remaining of Recognition (in years)
Stock options	$ 431	1.5
Stock grants	$ 32	1.7

10. Commitments and Contingencies

The Company has executed agreements with certain executive officers of the Company which, upon the occurrence of certain events related to a change in control, call for payments to the executives up to three times their annual salary and accelerated vesting of previously granted stock options.

From time to time, the Company is subject to various claims and legal proceedings covering matters that arise in the ordinary course of its business activities. Management believes any liability that may ultimately result from the resolution of these matters will not have a material adverse effect on the Company's consolidated financial position, operating results or cash flows.

11. Note Receivable

On October 1, 2018, the Company completed the sale of its spine implant business to CTL Medical. The sale included a $6.0 million noninterest bearing note receivable payable over a 36 month term to mature on October 1, 2021. The note receivable included an imputed interest rate of 10%. The note was paid in full in May 2021.

12. Leases

The Company has entered into multiple operating leases from which it conducts its business.

SINTX

With respect to SINTX operations, the Company leases 29,534 square feet of office, warehouse and manufacturing space under a single operating lease. This lease expires at the end of 2024. The lease has two five-year extension options.

SINTX Armor

On August 19, 2021, the Company, on behalf of SINTX Armor, entered into an Industrial Lease Agreement (the "SINTX Armor Lease") pursuant to which the Company has agreed to lease approximately 10,936 square feet of office and manufacturing space from which SINTX Armor will conduct its operations. The term of the SINTX Armor Lease is 122 months through October 2031.

TA&T

In connection with operation of its business, TA&T has entered into various leases from which it conducts its research, development and manufacturing activities. The leases have various expiration dates ranging from the end of 2022 through April 2025.

Leases with an initial term of 12 months or less are not recorded on the balance sheet. Lease expense is recognized on a straight-line basis over the term of the lease. The Company accounts for lease components separately from the non-lease components. The depreciable life of the assets and leasehold improvements are limited by the expected lease term.

As of September 30, 2022, the consolidated operating lease right-of-use assets totaled approximately $2.5 million, and the operating lease liability totaled approximately $2.5 million. Non-cash operating lease expense during the nine months ended September 30, 2022 and 2021, totaled approximately $0.4 and $0.3 million, respectively. As of September 30, 2022, the weighted-average discount rate for the Company's operating lease was 6.5%.

Operating lease future minimum payments together with the present values as of September 30, 2022, are summarized as follows:

Years Ending December 31,	September 30, 2022
2022	$ 213
2023	870
2024	896
2025	194
2026	127
Thereafter	669
Total future minimum lease payments	2,969

Less amounts representing interests	(438)
Present value of lease liability	2,531
Current-portion of operating lease liability	720
Long-term portion operating lease liability	$ 1,811

13. Subsequent Events

Rights Offering

On October 17, 2022, the Company completed a rights offering (the "Rights Offering") to holders of the Company's Series B Preferred Shares, Series C Preferred Shares, and warrants issued March 6, 2018, May 8, 2018, May 14, 2018, and February 6, 2020 (collectively, the "Security Holders") for subscriptions of 4,656 rights resulting in gross proceeds to the Company of approximately $4.7 million. Under the Rights Offering, the Company distributed to the Security Holders, at no charge, one non-transferable subscription right for each share of common stock, share of Series B Preferred Stock, share of Series C Preferred Stock, and each participating warrant (on an as-if-converted-to-common-stock basis) held on the record date, September 23, 2022. Each right entitled the holder to purchase one unit, at a subscription price of $1,000 per unit, consisting of one share of Series D Convertible Preferred Stock with a face value of $1,000 (and immediately convertible into shares of SINTX's common stock at a conversion price equal to $15.102 (the "Conversion Price")), and 27 common stock purchase warrants expiring five yearsfrom the date of issuance, which we refer to as the Class A Warrants, and (iii) 27 common stock purchase warrants expiring three yearsfrom the date of issuance, which we refer to as the Class B Warrants and, together with the Class A Warrants, the Warrants with each warrant exercisable for one share of common stock at an exercise price of $9.21 per share.

1,980,000 Units, Each Unit Consisting of One Share of Common Stock, One Class C Warrant to Purchase One Share of Common Stock, and One-Half of One Class D Warrant, Each Whole Class D Warrant to Purchase One Share of Common Stock

170,000 Units, Each Unit Consisting of One Pre-Funded Warrant, One Class C Warrant to Purchase One Share of Common Stock, and One-Half of One Class D Warrant, Each Whole Class D Warrant to Purchase One Share of Common Stock

86,000 Placement Agent Warrants to Purchase an Aggregate of Up To 86,000 Shares of Common Stock

Up to 3,481,000 Shares of Common Stock Issuable upon the Exercise of the Class C Warrants, Class D Warrants, Pre-Funded Warrants, and Placement Agent Warrants

PROSPECTUS

Maxim Group LLC

February 7, 2023