Table of Contents

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

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2021

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to .

Commission file number 001-13341

TITAN PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**94-3171940** **(I.R.S. Employer Identification Number)**
400 Oyster Point Blvd., Suite 505, South San Francisco, California **(Address of principal executive offices)**	**94080** **(Zip code)**

Registrant's telephone number, including area code: (650) 244-4990

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

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, par value $0.001	TTNP	Nasdaq Capital Market

Securities registered pursuant to Section 12(g) of the Act: None

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

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

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

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

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

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

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

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

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant based on the closing price on June 30, 2021 was approximately $25.6 million.

As of March 23, 2022, 12,039,421 shares of common stock, $0.001 par value, of the registrant were issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE:

NONE

Table of Contents

Titan Pharmaceuticals, Inc.
Annual Report on Form 10-K
For the Fiscal Year Ended December 31, 2021
Table of Contents

		Page #
PART I		3
Item 1.	Business	4
Item 1A.	Risk Factors	10
Item 1B.	Unresolved Staff Comments	17
Item 2.	Properties	17
Item 3.	Legal Proceedings	17
Item 4.	Mine Safety Disclosures	17
PART II		18
Item 5.	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	18
Item 6.	Selected Financial Data	18
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	19
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	25
Item 8.	Financial Statements and Supplementary Data	25
Item 9.	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	25
Item 9A.	Controls and Procedures	26
Item 9B.	Other Information	26
PART III		27
Item 10.	Directors, Executive Officers and Corporate Governance	27
Item 11.	Executive Compensation	29
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	32
Item 13.	Certain Relationships and Related Transactions, and Director Independence	33
Item 14.	Principal Accounting Fees and Services	34
PART IV		36
Item 15.	Exhibits, Financial Statement Schedules	36
Item 16.	Form 10-K Summary	36
SIGNATURES		39

PART I

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K or in the documents incorporated by reference herein may contain "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934 (the "Exchange Act") that involve substantial risks and uncertainties. We have attempted to identify forward-looking statements by terminology including "anticipates," "believes," "can," "continue," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "should," or "will" or the negative of these terms or other comparable terminology. Although we do not make forward looking statements unless we believe we have a reasonable basis for doing so, we cannot guarantee their accuracy. Forward-looking statements included or incorporated by reference in this report or our other filings with the Securities and Exchange Commission, or the SEC, include, but are not necessarily limited to, those relating to uncertainties relating to:

- our ability to raise capital when needed;
- difficulties or delays in the product development process, including the results of preclinical studies or clinical trials;
- financing and strategic agreements and relationships;
- difficulties or delays in the regulatory approval process;
- adverse side effects or inadequate therapeutic efficacy of our drug candidates that could slow or prevent product development or commercialization;
- dependence on third party suppliers;
- manufacturing, sales, marketing and distribution of any of our drug candidates that may be successfully developed and approved for commercialization;
- protection for our patents and other intellectual property or trade secrets; and
- competition.

Forward-looking statements should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of the times at, or by which, that performance or those results will be achieved. Forward-looking statements are based on information available at the time they are made and/or management's good faith belief as of that time with respect to future events, and are subject to risks and uncertainties, including the risks outlined under "Risk Factors" or elsewhere in this report, that could cause actual performance or results to differ materially from what is expressed in or suggested by the forward-looking statements.

Forward-looking statements speak only as of the date they are made. You should not put undue reliance on any forward-looking statements. We assume no obligation to update forward-looking statements to reflect actual results, changes in assumptions or changes in other factors affecting forward-looking information, except to the extent required by applicable securities laws. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements. We caution you not to give undue weight to such projections, assumptions and estimates.

References herein to "we," "us," "Titan," and "our company" refer to Titan Pharmaceuticals, Inc. unless the context otherwise requires.

Probuphine® and ProNeura® are trademarks of our company. This Annual Report on Form 10-K also includes trade names and trademarks of companies other than Titan.

All share and per share data in this report gives retroactive effect to a one-for-30 reverse stock split effected in November 2020.

Item 1. Business

Overview

We are a pharmaceutical company developing therapeutics utilizing our proprietary long-term drug delivery platform, ProNeura®, for the treatment of select chronic diseases for which steady state delivery of a drug has the potential to provide an efficacy and/or safety benefit. ProNeura consists of a small, solid implant made from a mixture of ethylene-vinyl acetate, or EVA, and a drug substance. The resulting product is a solid matrix that is designed to be administered subdermally in a brief, outpatient procedure and is removed in a similar manner at the end of the treatment period. These procedures may be performed by trained health care providers, or HCPs, including licensed and surgically qualified physicians, nurse practitioners, and physician's assistants in a HCP's office or other clinical setting.

Our first product based on our ProNeura technology was Probuphine® (buprenorphine implant), which is approved in the United States, Canada and the European Union, or EU, for the maintenance treatment of opioid use disorder in clinically stable patients taking 8 mg or less a day of oral buprenorphine. While Probuphine continues to be commercialized in Canada and in the EU (as Sixmo™) by other companies that have either licensed or acquired the rights from Titan, we discontinued commercialization of the product in the U.S. during the fourth quarter of 2020. Discontinuation of our commercial operations has allowed us to focus our limited resources on important product development programs and transition back to a product development company.

ProNeura Continuous Drug Delivery Platform

Our ProNeura continuous drug delivery system consists of a small, solid rod-shaped implant made from a mixture of EVA and a given drug substance. The resulting product is a solid matrix that is placed subdermally, normally in the inside part of the upper arm in a brief procedure using a local anesthetic and is removed in a similar manner at the end of the treatment period. The drug substance is released continuously through the process of dissolution-controlled diffusion. This results in a continuous, steady rate of release generally similar to intravenous administration. We believe that such long-term, near linear release characteristics are desirable as they avoid the fluctuating peak and trough drug levels seen with oral dosing that often poses treatment problems in a range of diseases.

The ProNeura platform was developed to address the need for a simple, practical method to achieve continuous long-term drug delivery, and, depending on the characteristics of the compound to be delivered, can potentially provide treatment on an outpatient basis over extended periods of up to 12 months. We believe that the benefits of this technology have been demonstrated by the clinical results seen to date with Probuphine, and, in addition, that the development and regulatory process have been affirmed by the U.S. Food and Drug Administration, or FDA, the European Medicines Agency, or EMA, and Health Canada approvals of this product. We have further demonstrated the feasibility of the ProNeura platform with small molecules, hormones, and bio-active peptides. The delivery system works with both hydrophobic and hydrophilic molecules. We have also shown the flexibility of the platform by experimenting with the release characteristics of the EVA implants, layering the implants with varying concentrations of drug, and generating implants of different sizes and porosity to achieve a desired delivery profile. We have recently received a grant from the Bill and Melinda Gates Foundation to undertake preliminary work on a long-acting implant capable of delivering two compounds- a human immunodeficiency virus, or HIV, preventative therapeutic and a contraceptive for women and girls in developing countries.

Development Programs

Several years ago, we began limited non-clinical laboratory experiments in collaboration with JT Pharmaceuticals, Inc., or JT Pharma, to assess the feasibility of delivering JT Pharma's kappa opioid agonist peptide, or TP-2021, utilizing our ProNeura system. Following our acquisition of TP-2021 in October 2020, we successfully manufactured a prototype implant containing TP-2021 (TP-2021 - ProNeura) to be used in appropriate small animal models. While our initial work focused on TP-2021's ability to activate peripheral kappa opioid receptors, potentially providing a non-addictive treatment for certain types of pain, in January 2021, our research pivoted to explore the feasibility of using TP-2021 in the treatment of chronic pruritus, a severe and debilitating condition defined as itching of the skin lasting longer than six weeks. According to a 2015 review by Mollanazar, N., et al., an estimated 23 – 44 million Americans suffer from chronic pruritus of both cutaneous and systemic etiologies. Current treatments include antihistamines, corticosteroids, and over-the-counter lotions, all of which are relatively ineffective and/or have undesirable side-effect profiles. The antipruritic effect of kappa opioid agonists is thought to be related to their binding to kappa opioid receptors on keratinocytes, immune cells, and peripheral itch neurons.

In February 2021, we announced that early non-clinical studies of TP-2021 showed very high affinity and specificity for the human kappa opioid receptor and demonstrated potent antipruritic activity when injected subcutaneously in a mouse model for moderate to severe pruritus. TP-2021 - ProNeura implants were then formulated and tested in this model. In November 2021, data presented at the annual meeting of the Society for Neuroscience demonstrated that significant reduction in scratching behavior in this proven animal model for pruritus was maintained in mice who received the TP-2021 - ProNeura implant through Day 56 post-implantation, when compared with control untreated mice, with no safety issues observed for the implanted animals over the three-month duration of treatment. Subsequently, efficacy in this pruritus model has been extended through Day 84 post-implantation. In addition, the TP-2021 - ProNeura implant provided sustained supra-therapeutic plasma levels of the peptide through Day 84 post-implantation in a separate pharmacokinetic study in mice. We believe that subdermal implantation of TP-2021 - ProNeura could potentially deliver therapeutic concentrations of TP-2021 in human subjects for up to six months or longer following a single in-office procedure. We will need to conduct Investigational New Drug, or IND, enabling non-clinical safety and pharmacology studies in preparation for regulatory approval to enter human clinical studies. We estimate that the Investigational New Drug, or IND, submission can be accomplished within 18 to 24 months.

Pursuant to a research and option license agreement with the Medical University of South Carolina Foundation for Research Development, we are also synthesizing a limited number of new peptides designed, like TP-2021, to bind with high selectivity to peripheral kappa opioid receptors. We will consider further development of any of these newly synthesized compounds that meet the criteria for high-affinity receptor bonding and antipruritic activity to enhance our intellectual property position.

We are also assessing the feasibility of non-implant biodegradable depot formulations of these kappa opioid receptor agonist peptides to provide antipruritic activity for shorter sustained periods (e.g., 1 – 3 months).

Nalmefene Development Program

In September 2019, the National Institute for Drug Addiction, or NIDA, awarded us an approximately $8.7 million grant over two years for our nalmefene implant development program for the prevention of opioid relapse following detoxification of patients suffering opioid use disorder, or OUD. An injectable formulation of nalmefene was approved by the FDA in 1995 for the management and reversal of opioid overdose, including respiratory depression, but this is no longer marketed in the U.S. Oral nalmefene was approved by the EMA in 2013 for treating alcohol dependence. A nasal formulation of nalmefene is currently in clinical development by another company for the treatment of opioid overdose.

The NIDA grant provides funds for the completion of implant formulation development, cGMP manufacturing and non-clinical studies required for filing an Investigational New Drug application, or IND. In early 2020, following a meeting with the FDA to review our non-clinical development plans and obtain guidance regarding filing an IND, the FDA provided clear guidance on the type of development plan that we should follow. Specifically, that this product development should follow the more expansive 505(b)(1) regulatory pathway rather than the shorter, more streamlined 505(b)(2) regulatory pathway we had been pursuing. Based on this input, we determined that collection of all the requisite non-clinical chronic toxicology data would require an additional six-month rodent chronic toxicity study and a three-month extension to the duration of an ongoing six-month non-rodent chronic toxicity study, resulting in a delay of the IND filing. We discussed the change in development plan with NIDA and they accepted our plan to reallocate previously approved funds for conduct of such studies and extended the existing grant term through August 2022. In September 2021, the FDA advised that it was reconsidering the regulatory pathway for the nalmefene implant and could ultimately determine that the 505(b)(2) process is potentially appropriate. We expect to submit the IND for this program in Q2 2022. If accepted, we could be eligible for the additional third through fifth year grant funding of approximately $6.3 million from NIDA. However, this funding availability is dependent on a progress review at NIDA. Additional funding from external sources for progression of the clinical program will be separately sought but will be dependent on finding a suitable partner.

Other programs

In October 2021, we received an approximately $500,000 grant from the Bill and Melinda Gates Foundation to demonstrate the ability to deliver a combination HIV preventative therapeutic and a contraceptive from a single ProNeura implant for women and adolescent girls in low- and middle-income countries.

In October 2021, we entered into a research and option license agreement, or MUSC Agreement, with the MUSC Foundation for Research Development, or MUSC FRD. Under the terms of the MUSC Agreement, we will conduct certain research, evaluation, proof of concept development and testing of at least three tetrapeptide kappa-opioid receptor agonist compounds related to the provisional U.S. patent application previously assigned to FRD by the Medical University of South Carolina ("MUSC") and entitled "Opioid Agonists and Methods of Use Thereof." In exchange, FRD has granted Titan the option to acquire an exclusive worldwide, commercial license to the inventions related to MUSC's compounds.

Agreements

JT Pharmaceuticals

In October 2020, we entered into an Asset Purchase Agreement, or the JT Agreement, with JT Pharmaceuticals, Inc., or JT Pharma, to acquire JT Pharma's kappa opioid agonist peptide, TP-2021, for use in combination with our ProNeura long-term, continuous drug delivery technology for the treatment of chronic pruritus and other potential medical applications. Under the terms of the JT Agreement, JT Pharma received a $15,000 closing payment and is entitled to receive future milestone payments, payable in cash or in stock, based on the achievement of regulatory milestones, and single-digit percentage earn-out payments on net sales of the product if successfully developed and approved for commercialization. In January 2022, in connection with our entry into a clarification agreement with JT Pharma, we made the first milestone payment under the JT Agreement for successful completion of a proof-of-concept study in an animal model.

Knight

Pursuant to an agreement (as amended, the Knight Agreement), we granted Knight Therapeutics Inc., or Knight, an exclusive license to commercialize Probuphine in Canada as well as a right of first negotiation in the event we intend to license commercialization rights to any other products in Canada. We are entitled to receive royalty payments from Knight on net sales of Probuphine in Canada ranging in percentage from the low-teens to the mid-thirties. In addition, we agreed to be the exclusive supplier of Probuphine to Knight subject to a supply agreement between us and Knight. During the term of the Knight Agreement, we may not commercialize any product in Canada containing buprenorphine that is intended for a treatment duration of six months or more.

Unless earlier terminated, the initial term of the Knight Agreement will expire on the 15th anniversary of the date of the first commercial sale of Probuphine for opioid addiction in Canada, which occurred during the fourth quarter of 2018. If Probuphine is approved for another indication in Canada after the fifth anniversary of the first commercial sale of Probuphine for opioid addiction in Canada, we must negotiate in good faith whether to extend the initial term. After the initial term, the Knight Agreement will automatically renew for two-year periods until either party provides the other party with written notice of its intent not to renew at least 180 days prior to the expiration of the initial term or then-current term. We or Knight may terminate the Knight Agreement in the event that (i) either party determines in good faith that it is not advisable for Knight to continue to commercialize Probuphine in Canada as a result of a bona fide safety issue, (ii) the other party has filed for bankruptcy, reorganization, liquidation or receivership proceedings, or (iii) the other party materially breached the agreement and has not cured such breach within a specified time period. In addition, subject to certain exceptions and requirements, we may terminate the Knight Agreement (i) if Knight discontinues the commercial sale of Probuphine for a period of at least three months and fails to resume sales within the specified cure period, or (ii) in the event that Knight commences any legal proceedings seeking to challenge the validity or ownership of any of our patents related to Probuphine.

In the event of termination, among other things, Knight shall (i) cease commercialization of Probuphine in Canada, (ii) transfer title to all current and pending regulatory submissions and regulatory approvals for Probuphine to us and (iii) pay any royalty payments generated by Knight's sales of Probuphine in Canada due to us.

Intellectual Property

Our goal is to obtain, maintain and enforce patent protection for our product candidates, formulations, processes, methods and any other proprietary technologies, preserve our trade secrets, and operate without infringing on the proprietary rights of other parties, both in the United States and in other countries. Our policy is to actively seek to obtain, where appropriate, the broadest intellectual property protection possible for our current product candidates and any future product candidates, proprietary information and proprietary technology through a combination of contractual arrangements and patents, both in the United States and abroad. However, patent protection may not afford us with complete protection against competitors who seek to circumvent our patents.

We also depend upon the skills, knowledge, experience and know-how of our management and research and development personnel, as well as that of our advisors, consultants and other contractors. To help protect our proprietary know-how, which may not be patentable, and for inventions for which patents may be difficult to enforce, we currently rely and will in the future rely on trade secret protection and confidentiality agreements to protect our interests. To this end, we require all of our employees, consultants, advisors and other contractors to enter into confidentiality agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries and inventions important to our business.

In June 2010, the United States Patent and Trademark Office, or USPTO, issued a patent covering methods of using Probuphine for the treatment of opiate addiction. Titan is the owner of this patent which claims a method for treating opiate addiction with a subcutaneously implanted device comprising buprenorphine and EVA, a biocompatible copolymer that releases buprenorphine continuously for extended periods of time. This patent will expire in April 2024. Patents covering certain dopamine agonist implants have been issued in the United States, Europe, Japan, China, Australia, Canada, South Korea, Mexico, New Zealand, South Africa, Israel and Hong Kong.

In October 2020, we acquired patent applications to a sustained release composition comprising certain kappa-opioid receptor agonists in combination with a biocompatible polymer matrix from JT Pharmaceuticals. Applications are pending in the United States, Europe, Japan, China, and Hong Kong. We have also filed provisional patent applications to the use of this implant for the treatment of pruritus.

We also have pending patent applications in the US, Australia, Canada, China, Europe, Hong Kong, India, Japan and Mexico for implants for release of lipophilic or amphiphilic pharmaceutical substances, and for loadable porous structures for use as implants. We also have pending patent applications in the US, Australia, Canada, China, Europe, Hong Kong, India, Japan, South Korea, Mexico, Singapore, and South Africa for implants with reduced initial burst.

We have additional patents for a heterogeneous implant designed with some unique properties that may provide benefits to the structural integrity of the implants and potentially enhance drug delivery. Patents for this heterogeneous implant have been granted in the US, Australia, Canada, Europe, Hong Kong, India, Japan, South Korea, Mexico, Singapore, and South Africa.

Future court decisions or changes in patent law might materially affect the patents or patent applications, including, but not limited to, their expiration dates.

Competition

The pharmaceutical and biotechnology industries are characterized by rapidly evolving technology and intense competition. Our product development programs are currently in non-clinical stages of development and once these commence clinical development we can assess and provide details on specific competitive environment.

Manufacturing

Ongoing formulation development is conducted at a dedicated facility established at Southwest Research Institute, or SwRI®, in San Antonio, Texas that includes cGMP manufacturing and testing capabilities. We also receive support services from the vast array of SwRI groups with expertise in manufacturing and material sciences. The facilities are compliant with both FDA and Drug Enforcement Agency, or DEA, requirements enabling us to work with controlled substances, and the manufacturing scale is ideal for product development during non-clinical and clinical testing stages.

Manufacturing of Probuphine was primarily conducted at DPT Laboratories, Inc., or DPT, pursuant to a commercial manufacturing agreement with DPT that governed the terms of the production and supply of Probuphine for the U.S., Canada and EU. In October 2020, we entered into Debt Settlement and Release Agreement, or DSRA, which transferred the manufacturing facility at DPT to L. Molteni & C. Dei Frattelli Alitti Societa Di Esercizio S.P.A., or Molteni. Under the agreement, we retain access to the facility, through Molteni, for the manufacture and supply of Probuphine to Knight for Canada.

Government Regulation

Government authorities in the United States at the federal, state and local level and in other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, post-approval monitoring and reporting, marketing and export and import of drug products. Generally, before a new drug can be marketed, considerable data demonstrating its quality, safety and efficacy must be obtained, organized into a format specific to each regulatory authority, submitted for review and approved by the regulatory authority.

In the United States, the FDA regulates drugs and devices under the Food, Drug and Cosmetics Act, or FDCA. Drugs and devices are also subject to other federal, state and local statutes and regulations. Products composed of both a drug product and device product are deemed combination products. If marketed individually, each component would be subject to different regulatory pathways and reviewed by different centers within the FDA. A combination product, however, is assigned to a center that will have primary jurisdiction over its regulation based on a determination of the combination product's primary mode of action, which is the single mode of action that provides the most important therapeutic action. In the case of some of our product candidates, we expect the primary mode of action to be attributable to the drug component of the product, which means that the FDA's Center for Drug Evaluation and Research would have primary jurisdiction over the premarket development, review and approval. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources and includes the following:

- Our product candidates must be approved by the FDA through the New Drug Application, or NDA, process before they may be legally marketed in the United States. The process required by the FDA before a drug may be marketed in the United States generally involves the following:
- Completion of extensive nonclinical laboratory tests, animal studies and formulation studies in accordance with applicable regulations, including the FDA's Good Laboratory Practice, or GLP, regulations;
- Submission to the FDA of an IND application, which must become effective before human clinical trials may begin;
- Approval by an independent institutional review board, or IRB, or ethics committee at each clinical trial site before each trial may be initiated;
- Performance of adequate and well-controlled human clinical trials in accordance with applicable IND and other clinical trial-related regulations, referred to as good clinical practices, or GCPs, to establish the safety and efficacy of the proposed drug for each proposed indication;
- Submission to the FDA of an NDA for a new drug;
- A determination by the FDA within 60 days of its receipt of an NDA to file the NDA for review;
- Satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities where the drug is produced to assess compliance with cGMP requirements to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity;
- Potential FDA audit of the nonclinical study and/or clinical trial sites that generated the data in support of the NDA; and
- FDA review and approval of the NDA, including consideration of the views of any FDA advisory committee, prior to any commercial marketing or sale of the drug in the United States.

The nonclinical and clinical testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approvals for our product candidates will be granted on a timely basis, if at all.

The data required to support an NDA is generated in two distinct development stages: nonclinical and clinical. For new chemical entities, the nonclinical development stage generally involves synthesizing the active component, developing the formulation and determining the manufacturing process, as well as carrying out non-human toxicology, pharmacology and drug metabolism studies in the laboratory, which support subsequent clinical testing. These nonclinical tests include laboratory evaluation of product chemistry, formulation, stability and toxicity, as well as animal studies to assess the characteristics and potential safety and efficacy of the product. The conduct of the nonclinical tests must comply with federal regulations, including GLPs. The sponsor must submit the results of the nonclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of the IND. An IND is a request for authorization from the FDA to administer an investigational drug product to humans. Some nonclinical testing may continue even after the IND is submitted, but an IND must become effective before human clinical trials may begin. The central focus of an IND submission is on the general investigational plan and the protocol(s) for human trials. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials, including concerns that human research subjects will be exposed to unreasonable health risks, and places the IND on clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a drug candidate at any time before or during clinical trials due to safety concerns or non-compliance. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that could cause the trial to be suspended or terminated.

The clinical stage of development involves the administration of the drug candidate to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control, in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical trial. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria and the parameters to be used to monitor subject safety and assess efficacy. Each protocol, and any subsequent amendments to the protocol, must be submitted to the FDA as part of the IND. Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the informed consent form that must be provided to each clinical trial subject or his or her legal representative and must monitor the clinical trial until completion. There are also requirements governing the reporting of ongoing clinical trials and completed clinical trial results to public registries.

Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. These sanctions could include, among other actions, the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, untitled or warning letters, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement, or civil or criminal penalties. Additionally, a manufacturer may need to recall a product from the market. Any agency or judicial enforcement action could have a material adverse effect on us.

Employees

As of March 23, 2022, we had 11 full-time employees.

Corporate Information

We were incorporated under the laws of the State of Delaware in February 1992. Our principal executive offices are located at 400 Oyster Point Blvd., Suite 505, South San Francisco, CA 94080. Our telephone number is (650) 244-4990.We make our SEC filings available on the Investor Relations page of our website, http://titanpharm.com/. Information contained on our website is not part of this Annual Report on Form 10-K.

Item 1A. Risk Factors

Risks Related to Our Business and Industry

Our ProNeura development programs are at very early stages and will require substantial additional resources that may not be available to us.

To date, other than our work on Probuphine in OUD and our work on nalmefene, we have conducted only limited research and development activities assessing our ProNeura delivery system's applicability in other potential indications. While the nalmefene program is being funded in large part by NIDA, there is no assurance that NIDA will continue to provide the necessary funding to complete the regulatory approval process for this product candidate. We will also require substantial additional funds to advance our kappa opioid agonist program beyond the proof-of-concept stage and to support further research and development activities, including the anticipated costs of nonclinical studies and clinical trials, regulatory approvals, and eventual commercialization of any therapeutic based on our ProNeura platform technology. If we are unable to obtain substantial government grants or enter into third party collaborations to fund our ProNeura programs, we will need to seek additional sources of financing, which may not be available on favorable terms, if at all. If we are unsuccessful in obtaining the requisite funding for our ProNeura programs, we could be forced to discontinue product development. Furthermore, funding arrangements with collaborative partners or others may require us to relinquish rights to technologies, product candidates or products that we would otherwise seek to develop or commercialize ourselves or license rights to technologies, product candidates or products on terms that are less favorable to us than might otherwise be available.

Our ability to successfully develop any future product candidates based on our ProNeura drug delivery technology is subject to the risks of failure and delay inherent in the development of new pharmaceutical products, including: delays in product development, clinical testing, or manufacturing; unplanned expenditures in product development, clinical testing, or manufacturing; failure to receive regulatory approvals; emergence of superior or equivalent products; inability to manufacture on our own, or through any others, product candidates on a commercial scale; and failure to achieve market acceptance. Because of these risks, our research and development efforts may not result in any commercially viable products and our business, financial condition, and results of operations could be materially harmed.

Clinical trials required for new product candidates are expensive and time-consuming, and their outcome is uncertain.

Conducting clinical trials is a lengthy, time-consuming, and expensive process. The length of time may vary substantially according to the type, complexity, novelty, and intended use of the product candidate, and often can be several years or more per trial. Delays associated with products for which we are directly conducting clinical trials may cause us to incur additional operating expenses. The commencement and rate of completion of clinical trials may be delayed by many factors, including, for example:

- inability to manufacture sufficient quantities of qualified materials under cGMP for use in clinical trials;
- slower than expected rates of patient recruitment;
- failure to recruit a sufficient number of patients; modification of clinical trial protocols;
- changes in regulatory requirements for clinical trials;
- the lack of effectiveness during clinical trials;
- the emergence of unforeseen safety issues;
- delays, suspension, or termination of the clinical trials due to the institutional review board responsible for overseeing the study at a particular study site; and
- government or regulatory delays or "clinical holds" requiring suspension or termination of the trials.

The results from early clinical trials are not necessarily predictive of results obtained in later clinical trials. Accordingly, even if we obtain positive results from early clinical trials, we may not achieve the same success in future clinical trials. Clinical trials may not demonstrate statistically significant safety and effectiveness to obtain the requisite regulatory approvals for product candidates.

The failure of clinical trials to demonstrate safety and effectiveness for the desired indications could cause us to abandon a product candidate and could delay development of other product candidates. Any delay in, or termination of, our clinical trials could materially harm our business, financial condition, and results of operations.

We face risks associated with third parties conducting preclinical studies and clinical trials of our products.

We depend on third-party laboratories and medical institutions to conduct preclinical studies and clinical trials for our products and other third-party organizations to perform data collection and analysis, all of which must maintain both good laboratory and good clinical practices. We also depend upon third party manufacturers for the production of any products we may successfully develop to comply with cGMP of the FDA, which are similarly outside our direct control. If third party laboratories and medical institutions conducting studies of our products fail to maintain both good laboratory and clinical practices, the studies could be delayed or have to be repeated.

We face risks associated with product liability lawsuits that could be brought against us.

The testing, manufacturing, marketing and sale of human therapeutic products entail an inherent risk of product liability claims. We currently have a limited amount of product liability insurance, which may not be sufficient to cover claims that may be made against us in the event that the use or misuse of our product candidates causes, or merely appears to have caused, personal injury or death. In the event we are forced to expend significant funds on defending product liability actions, and in the event those funds come from operating capital, we will be required to reduce our business activities, which could lead to significant losses. Adequate insurance coverage may not be available in the future on acceptable terms, if at all. If available, we may not be able to maintain any such insurance at sufficient levels of coverage and any such insurance may not provide adequate protection against potential liabilities. Whether or not a product liability insurance policy is obtained or maintained in the future, any claims against us, regardless of their merit, could severely harm our financial condition, strain our management and other resources or destroy the prospects for commercialization of the product which is the subject of any such claim.

We may be unable to protect our patents and proprietary rights.

Our future success will depend to a significant extent on our ability to:

- obtain and keep patent protection for our products, methods and technologies on a domestic and international basis;
- enforce our patents to prevent others from using our inventions;
- maintain and prevent others from using our trade secrets; and
- operate and commercialize products without infringing on the patents or proprietary rights of others.

We cannot assure you that our patent rights will afford any competitive advantages, and these rights may be challenged or circumvented by third parties. Further, patents may not be issued on any of our pending patent applications in the U.S. or abroad. Because of the extensive time required for development, testing and regulatory review of a potential product, it is possible that before a potential product can be commercialized, any related patent may expire or remain in existence for only a short period following commercialization, reducing or eliminating any advantage of the patent. If we sue others for infringing our patents, a court may determine that such patents are invalid or unenforceable. Even if the validity of our patent rights is upheld by a court, a court may not prevent the alleged infringement of our patent rights on the grounds that such activity is not covered by our patent claims.

In addition, third parties may sue us for infringing their patents. In the event of a successful claim of infringement against us, we may be required to:

- pay substantial damages;
- stop using our technologies and methods;
- stop certain research and development efforts;
- develop non-infringing products or methods; and

- obtain one or more licenses from third parties.

If required, we cannot assure you that we will be able to obtain such licenses on acceptable terms, or at all. If we are sued for infringement, we could encounter substantial delays in development, manufacture and commercialization of our product candidates. Any litigation, whether to enforce our patent rights or to defend against allegations that we infringe third party rights, will be costly, time consuming, and may distract management from other important tasks.

We also rely in our business on trade secrets, know-how and other proprietary information. We seek to protect this information, in part, through the use of confidentiality agreements with employees, consultants, advisors and others. Nonetheless, we cannot assure you that those agreements will provide adequate protection for our trade secrets, know-how or other proprietary information and prevent their unauthorized use or disclosure. To the extent that consultants, key employees or other third parties apply technological information independently developed by them or by others to our proposed products, disputes may arise as to the proprietary rights to such information, which may not be resolved in our favor.

We must comply with extensive government regulations.

The research, development, manufacture, labeling, storage, record-keeping, advertising, promotion, import, export, marketing and distribution of pharmaceutical products are subject to an extensive regulatory approval process by the FDA in the U.S. and comparable health authorities in foreign markets. The process of obtaining required regulatory approvals for drugs is lengthy, expensive and uncertain. Approval policies or regulations may change, and the FDA and foreign authorities have substantial discretion in the pharmaceutical approval process, including the ability to delay, limit or deny approval of a product candidate for many reasons. Despite the time and expense invested in clinical development of product candidates, regulatory approval is never guaranteed. Regulatory approval may entail limitations on the indicated usage of a drug, which may reduce the drug's market potential. Even if regulatory clearance is obtained, post-market evaluation of the products, if required, could result in restrictions on a product's marketing or withdrawal of the product from the market, as well as possible civil and criminal sanctions. Of the large number of drugs in development, only a small percentage successfully complete the regulatory approval process and are commercialized.

We face intense competition.

With respect to our product development programs, we face competition from numerous companies that currently market, or are developing, products for the treatment of the diseases and disorders we have targeted, many of which have significantly greater research and development capabilities, experience in obtaining regulatory approvals and manufacturing, marketing, financial and managerial resources than we have. We also compete with universities and other research institutions in the development of products, technologies and processes, as well as the recruitment of highly qualified personnel. Our competitors may succeed in developing technologies or products that are more effective than the ones we have under development or that render our proposed products or technologies noncompetitive or obsolete. In addition, our competitors may achieve product commercialization or patent protection earlier than we will.

We depend on a small number of employees and consultants.

We are highly dependent on the services of a limited number of personnel and the loss of one or more of such individuals could substantially impair our ongoing commercialization efforts. We compete in our hiring efforts with other pharmaceutical and biotechnology companies, and it may be difficult and could take an extended period of time because of the limited number of individuals in our industry with the range of skills and experience required and because of our limited resources.

In addition, we retain scientific and clinical advisors and consultants to assist us in all aspects of our business. Competition to hire and retain consultants from a limited pool is intense. Further, because these advisors are not our employees, they may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to us, and typically they will not enter into non-compete agreements with us. If a conflict of interest arises between their work for us and their work for another entity, we may lose their services. In addition, our advisors may have arrangements with other companies to assist those companies in developing products or technologies that may compete with ours.

We face potential liability related to the privacy of health information we obtain from clinical trials sponsored by us or our collaborators, from research institutions and our collaborators, and directly from individuals.

Numerous federal and state laws, including state security breach notification laws, state health information privacy laws, and federal and state consumer protection laws, govern the collection, use, and disclosure of personal information. In addition, most health care providers, including research institutions from which we or our collaborators obtain patient health information, are subject to privacy and security regulations promulgated under the Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act. Although we are not directly subject to HIPAA, we could potentially be subject to criminal penalties if we, our affiliates, or our agents knowingly obtain or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA.

We face risks related to health epidemics, such as the current COVID-19 global pandemic, that could adversely affect our operations or financial results.

The spread of COVID-19, the novel coronavirus, including restrictions on travel, "shelter in place" orders, and quarantine policies put into place by businesses and state and local governments to mitigate its transmission, has had and may continue to have a material adverse effect on our business. While the duration of the pandemic and its potential economic impact are difficult to predict, it already has caused significant disruption in the healthcare industry and is likely to have continuing impacts as it continues. The travel restrictions, "shelter in place" orders, quarantine policies, and general concerns about the spread of COVID-19 were a significant factor in our decision to wind down our commercial operations because of the resulting disruptions in the delivery of healthcare to patients, our sales and marketing efforts and REMS training activities, as well as the operations of the various parts of our supply and distribution chain. Although state and local governments began to ease COVID-19 restrictions in the second quarter of 2021, as we have seen with the onset of the Delta and Omicron variants, the extent to which COVID-19 continues to impact our business, healthcare systems in general or the global economy as a whole will depend on future developments that are highly uncertain and cannot be predicted and may result in a sustained economic downturn that could affect our ability to access capital on reasonable terms, or at all.

We are increasingly dependent on information technology systems, infrastructure and data. Cybersecurity breaches could expose us to liability, damage our reputation, compromise our confidential information or otherwise adversely affect our business.

We are increasingly dependent upon information technology systems, infrastructure and data. Our computer systems may be vulnerable to service interruption or destruction, malicious intrusion and random attack. Security breaches pose a risk that sensitive data, including intellectual property, trade secrets or personal information may be exposed to unauthorized persons or to the public. Cyber-attacks are increasing in their frequency, sophistication and intensity, and have become increasingly difficult to detect. Cyber-attacks could include the deployment of harmful malware, denial-of service, social engineering and other means to affect service reliability and threaten data confidentiality, integrity and availability. Our key business partners face similar risks, and a security breach of their systems could adversely affect our security posture. While we continue to invest in data protection and information technology, there can be no assurance that our efforts will prevent service interruptions, or identify breaches in our systems, that could adversely affect our business and operations and/or result in the loss of critical or sensitive information, which could result in financial, legal, business or reputational harm.

Risks Related to Our Financial Condition and Need for Additional Capital

We have incurred net losses in almost every year since our inception, which losses will continue for the foreseeable future.

We have incurred net losses in almost every year since our inception. Our financial statements have been prepared assuming that we will continue as a going concern. For the years ended December 31, 2021 and 2020, we had net losses of approximately $8.8 million and $18.2 million, respectively, and had net cash used in operating activities of approximately $7.9 million and $17.2 million, respectively. These net losses and negative cash flows have had, and will continue to have, an adverse effect on our stockholders' equity and working capital. We expect to continue to incur net losses and negative operating cash flow for the foreseeable future as we focus on development of ProNeura based products. The amount of future net losses will depend, in part, on the rate of future growth of our expenses and our ability to obtain government or third-party funding for our development programs.

We will require additional proceeds to fund our product development programs and working capital requirements.

We currently estimate that our available cash and cash equivalents will be sufficient to fund our working capital needs and product development efforts only to the end of the third quarter of 2022. We will require substantial additional funds to advance our kappa opioid agonist program beyond the proof-of-concept stage, and to fund any of our ProNeura development programs, including nalmefene, into the clinic and to complete the regulatory approval process necessary to commercialize any products we might develop. Investment in pharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that a product candidate will fail to gain regulatory approval or become commercially viable. While we are currently evaluating the alternatives available to us, including the possible sale of our Probuphine assets, government grants, third-party collaborations for one or more of our ProNeura programs and potential merger opportunities, our efforts to address our liquidity requirements may not be successful. Furthermore, there can be no assurance that any source of capital will be available to us on acceptable terms or will not involve substantial dilution to our stockholders. Our failure to obtain substantial funds in the next several months would likely result in the cessation of one or more of our development programs or the wind-down of our business.

Our net operating losses and research and development tax credits may not be available to reduce future federal and state income tax payments.

At December 31, 2021, we had federal net operating loss and tax credit carryforwards of approximately $258.9 million and approximately $7.5 million, respectively, and state net operating loss and tax credit carryforwards of approximately $110.6 million and approximately $9.2 million, respectively, available to offset future taxable income, if any. Current federal and state tax laws include substantial restrictions on the utilization of net operating loss and tax credits in the event of an ownership change and we cannot assure you that our net operating loss and tax carryforwards will continue to be available.

Risks Related to our Common Stock

Our share price may be volatile, which could prevent you from being able to sell your shares at or above your purchase price.

The market price of shares of our common stock has been and may continue to be subject to wide fluctuations in response to many risk factors listed in this section, and others beyond our control, including:

- results of our product development efforts;
- regulatory actions with respect to our products under development or our competitors' products;
- actual or anticipated fluctuations in our financial condition and operating results;
- actual or anticipated fluctuations in our competitors' operating results or growth rate;
- announcements by us, our potential future collaborators or our competitors of significant acquisitions, strategic collaborations, joint ventures, or capital commitments;
- issuance of new or updated research or reports by securities analysts;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- inconsistent trading volume levels of our shares;
- additions or departures of key personnel;
- disputes or other developments related to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;

- market conditions for biopharmaceutical stocks in general; and
- general economic and market conditions.

The stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of shares of our common stock and could subject us to securities class action litigation.

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

The trading market for our common stock will depend on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. There can be no assurance that analysts will cover us or provide favorable coverage. If one or more of the analysts who cover us downgrade our stock or change their opinion of our stock, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

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

Provisions in our certificate of incorporation and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of our company that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions provide that:

- the authorized number of directors can be changed only by resolution of our board of directors;
- our bylaws may be amended or repealed by our board of directors or our stockholders;
- stockholders may not call special meetings of the stockholders or fill vacancies on the board of directors;
- our board of directors is authorized to issue, without stockholder approval, preferred stock, the rights of which will be determined at the discretion of the board of directors 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 our board of directors does not approve;
- our stockholders do not have cumulative voting rights, and therefore our stockholders holding a majority of the shares of common stock outstanding will be able to elect all of our directors; and
- our stockholders must comply with advance notice provisions to bring business before or nominate directors for election at a stockholder meeting.

Our failure to meet the continued listing requirements of Nasdaq could result in a de-listing of our common stock.

During 2020, we received several notices from the Listing Qualifications Department the Nasdaq Stock Market, or Nasdaq, regarding the fact that the market price of our common stock was below the $1.00 minimum bid price requirement for continued listing. As a result of the reverse stock split we effected on November 30, 2020, we were able to regain compliance with the minimum bid requirement and remain listed on Nasdaq. We have also previously received notices of noncompliance due to our failure to maintain the $2,500,000 minimum stockholders’ equity requirement for continued listing. We were able to regain compliance with that requirement through capital raises and our discontinuation of the expenses associated with Probuphine commercial operations.

There can be no assurance that we will continue to meet all of the criteria necessary for Nasdaq to allow us to remain listed. For example, our share price has recently fallen below the $1.00 minimum bid price requirement for continued listing.

If our common stock is delisted from Nasdaq, our common stock would likely then trade only in the over-the- counter market. If our common stock were to trade on the over-the-counter market, selling our common stock could be more difficult because smaller quantities of shares would likely be bought and sold, transactions could be delayed, and we could face significant material adverse consequences, including: a limited availability of market quotations for our securities; reduced liquidity with respect to our securities; a determination that our shares are a "penny stock," which will require brokers trading in our securities to adhere to more stringent rules, possibly resulting in a reduced level of trading activity in the secondary trading market for our securities; a reduced amount of news and analyst coverage for our Company; and a decreased ability to issue additional securities or obtain additional financing in the future. These factors could result in lower prices and larger spreads in the bid and ask prices for our common stock and would substantially impair our ability to raise additional funds and could result in a loss of institutional investor interest and fewer development opportunities for us.

In addition to the foregoing, if our common stock is delisted from Nasdaq and it trades on the over-the- counter market, the application of the "penny stock" rules could adversely affect the market price of our common stock and increase the transaction costs to sell those shares. The Securities and Exchange Commission, or SEC, has adopted regulations which generally define a "penny stock" as an equity security that has a market price of less than $5.00 per share, subject to specific exemptions. If our common stock is delisted from Nasdaq and it trades on the over-the- counter market at a price of less than $5.00 per share, our common stock would be considered a penny stock. The SEC's penny stock rules require a broker-dealer, before a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document that provides information about penny stocks and the risks in the penny stock market. The broker-dealer must also provide the customer with current bid and offer quotations for the penny stock, the compensation of the broker-dealer and the salesperson in the transaction, and monthly account statements showing the market value of each penny stock held in the customer's account. In addition, the penny stock rules generally require that before a transaction in a penny stock occurs, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's agreement to the transaction. If applicable in the future, these rules may restrict the ability of brokers-dealers to sell our common stock and may affect the ability of investors to sell their shares, until our common stock no longer is considered a penny stock.

Future sales of our common stock, or the perception that future sales may occur, may cause the market price of our common stock to decline, even if our business is doing well.

Sales by our stockholders of a substantial number of shares of our common stock in the public market could occur in the future. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock.

We will seek to raise additional funds and may finance acquisitions or develop strategic relationships by issuing securities that would dilute your ownership. Depending on the terms available to us, if these activities result in significant dilution, it may negatively impact the trading price of our shares of common stock.

We have financed our operations, and we expect to continue seeking to finance our operations, acquisitions, if any, and the development of strategic relationships by issuing equity and/or convertible securities, which could significantly reduce the percentage ownership of our existing stockholders. Further, any additional financing that we secure, including any debt financing, may require the granting of rights, preferences or privileges senior to, or pari passu with, those of our common stock. Any issuances by us of equity securities may be at or below the prevailing market price of our common stock and in any event may have a dilutive impact on your ownership interest, which could cause the market price of our common stock to decline. We may also raise additional funds through the incurrence of debt or the issuance or sale of other securities or instruments senior to our shares of common stock. The holders of any securities or instruments we may issue may have rights superior to the rights of our common stockholders. If we experience dilution from the issuance of additional securities and we grant superior rights to new securities over common stockholders, it may negatively impact the trading price of our shares of common stock and you may lose all or part of your investment.

We have never paid any cash dividends and have no plans to pay any cash dividends in the future.

Holders of shares of our common stock are entitled to receive such dividends as may be declared by our board of directors. To date, we have paid no cash dividends on our shares of our preferred or common stock and we do not expect to pay cash dividends in

the foreseeable future. In addition, the declaration and payment of cash dividends is restricted under the terms of our existing Loan Agreement. We intend to retain future earnings, if any, to provide funds for operations of our business. Therefore, any return investors in our preferred or common stock may have will be in the form of appreciation, if any, in the market value of their shares of common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties

Our executive offices are located in approximately 3,295 square feet of office space in South San Francisco, California that we occupy under a three-year operating lease expiring in June 2024. It is our intention to continue to be based in South San Francisco.

Item 3. Legal Proceedings

A legal proceeding has been initiated by a former employee alleging wrongful termination, retaliation, infliction of emotional distress, negligent supervision, hiring and retention and slander. An independent investigation into this individual's allegations of whistleblower retaliation, while still an employee, was conducted utilizing an outside investigator and concluded that such allegations were not substantiated. We intend to vigorously defend the lawsuit (which we have compelled into arbitration); however, in light of our cash position, there can be no assurance that the defense and/or settlement of this matter will not have a material adverse impact on our business.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

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

Our common stock is listed on the Nasdaq Capital Market ("Nasdaq") under the symbol "TTNP".

Approximate Number of Equity Security Holders

At March 23, 2022, there were 12,039,421 shares of our common stock outstanding held by 94 holders of record. The number of record holders was determined from the records of our transfer agent and does not include beneficial owners of common stock whose shares are held in the names of various security brokers, dealers, and registered clearing agencies.

Dividends

We have never declared or paid any cash dividends on our common stock, and we do not anticipate paying any cash dividends to stockholders in the foreseeable future. Any future determination to pay cash dividends will be at the discretion of our Board and will be dependent upon our financial condition, results of operations, capital requirements, and such other factors as the Board deems relevant.

Equity Compensation Plan Information

The following table sets forth aggregate information regarding our equity compensation plans in effect as of December 31, 2021:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrant and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (c)
Equity compensation plans approved by security holders(1)	680,388	$ 11.55	320,936
Equity compensation plans not approved by security holders(2)	1,272	$ 534.02	—
Total	681,660	$ 12.53	320,936

(1) In January 2021, our stockholders approved an amendment to the 2015 Omnibus Equity Incentive plan to increase the number of authorized shares to 1,000,000 shares.

(2) Includes 1,272 non-qualified stock options and restricted share awards granted to employees, directors and consultants under our 2014 Incentive Plan. For a description of the 2014 Plan, see Note 9 to the financial statements.

Item 6. Selected Financial Data

Not applicable

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

Overview

We are a pharmaceutical company developing therapeutics utilizing our proprietary long-term drug delivery platform, ProNeura®, for the treatment of select chronic diseases for which steady state delivery of a drug has the potential to provide an efficacy and/or safety benefit. ProNeura consists of a small, solid implant made from a mixture of ethylene-vinyl acetate, or EVA, and a drug substance. The resulting product is a solid matrix that is designed to be administered subdermally in a brief, outpatient procedure and is removed in a similar manner at the end of the treatment period. These procedures may be performed by trained health care providers, or HCPs, including licensed and surgically qualified physicians, nurse practitioners, and physician's assistants in a HCP's office or other clinical setting.

Our first product based on our ProNeura technology was Probuphine® (buprenorphine implant), which is approved in the United States, Canada and the European Union, or EU, for the maintenance treatment of opioid use disorder in clinically stable patients taking 8 mg or less a day of oral buprenorphine. While Probuphine continues to be commercialized in Canada and in the EU (as Sixmo™) by other companies that have either licensed or acquired the rights from Titan, we discontinued commercialization of the product in the U.S. during the fourth quarter of 2020 to focus our limited resources on our product development programs.

Critical Accounting Policies and the Use of Estimates

The preparation of our financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in our financial statements and accompanying notes. Actual results could differ materially from those estimates. We believe the following accounting policies for the years ended December 31, 2021 and 2020 to be applicable:

Revenue Recognition

We generate revenue principally from collaborative research and development arrangements, sales or licenses of technology, government grants, sales of Probuphine materials to Molteni and Knight, and prior to the discontinued operations, the sale of Probuphine in the U.S. Consideration received for revenue arrangements with multiple components is allocated among the separate performance obligations based upon their relative estimated standalone selling price.

In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our agreements, we perform the following steps for our revenue recognition: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) we satisfy each performance obligation.

Grant Revenue

We have contracts with NIDA, the Bill & Melinda Gates Foundation, and other government-sponsored organizations for research and development related activities that provide for payments for reimbursed costs, which may include overhead and general and administrative costs. We recognize revenue from these contracts as we perform services under these arrangements when the funding is committed. Associated expenses are recognized when incurred as research and development expense. Revenues and related expenses are presented gross in the statements of operations and comprehensive loss.

Net Product Revenue

Prior to the discontinuation of our commercialization activities relating to Probuphine in the U.S., we recognized revenue from product sales when control of the product transferred, generally upon shipment or delivery, to our customers, including distributors. As customary in the pharmaceutical industry, our gross product revenue was subject to a variety of deductions in the forms of variable consideration, such as rebates, chargebacks, returns and discounts, in arriving at reported net product revenue. This variable consideration was estimated using the most-likely amount method, which is the single most-likely outcome under a contract and was typically at stated contractual rates. The actual outcome of this variable consideration could materially differ from our estimates. From time to time, we would adjust our estimates of this variable consideration when trends or significant events indicated that a change in

estimate is appropriate to reflect the actual experience. Additionally, we continued to assess the estimates of our variable consideration as we continued to accumulate additional historical data.

Returns – Consistent with the provisions of ASC 606, we estimated returns at the inception of each transaction, based on multiple considerations, including historical sales, historical experience of actual customer returns, levels of inventory in our distribution channel, expiration dates of purchased products and significant market changes which could impact future expected returns to the extent that we would not reverse any receivables, revenues, or contract assets already recognized under the agreement. During the year ended December 31, 2019, we entered into agreements with large national specialty pharmacies with a distribution channel different from that of our existing customers and, therefore, the related reserves had unique considerations. We continued to evaluate the activities with these specialty pharmacies and updated the related reserves accordingly.

Rebates – Our provision for rebates was estimated based on our customers' contracted rebate programs and our historical experience of rebates paid.

Discounts –The provision was estimated based upon invoice billings, utilizing historical customer payment experience.

Performance Obligations

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. Our performance obligations include commercialization license rights, development services and services associated with the regulatory approval process.

We have optional additional items in contracts, which are accounted for as separate contracts when the customer elects such options. Arrangements that include a promise for future commercial product supply and optional research and development services at the customer's discretion are generally considered as options. We assess if these options provide a material right to the customer and, if so, such material rights are accounted for as separate performance obligations. If we are entitled to additional payments when the customer exercises these options, any additional payments are recorded in revenue when the customer obtains control of the goods or services.

Transaction Price

We have both fixed and variable consideration. Non-refundable upfront payments are considered fixed, while milestone payments are identified as variable consideration when determining the transaction price. Funding of research and development activities is considered variable until such costs are reimbursed at which point they are considered fixed. We allocate the total transaction price to each performance obligation based on the relative estimated standalone selling prices of the promised goods or services for each performance obligation.

At the inception of each arrangement that includes milestone payments, we evaluate whether the milestones are considered probable of being achieved and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone is included in the transaction price. Milestone payments that are not within our control, such as approvals from regulators, are not considered probable of being achieved until those approvals are received.

For arrangements that include sales-based royalties or earn-out payments, including milestone payments based on the level of sales, and the license or purchase agreement is deemed to be the predominant item to which the royalties or earn-out payments relate, we recognizes revenue at the later of (a) when the related sales occur, or (b) when the performance obligation to which some or all of the royalty or earn-out payment has been allocated has been satisfied (or partially satisfied).

Allocation of Consideration

As part of the accounting for these arrangements, we must develop assumptions that require judgment to determine the stand-alone selling price of each performance obligation identified in the contract. Estimated selling prices for license rights are calculated using the residual approach. For all other performance obligations, we use a cost-plus margin approach.

Timing of Recognition

Significant management judgment is required to determine the level of effort required under an arrangement and the period over which we expect to complete our performance obligations under an arrangement. We estimate the performance period or measure of progress at the inception of the arrangement and re-evaluate it each reporting period. This re-evaluation may shorten or lengthen the period over which revenue is recognized. Changes to these estimates are recorded on a cumulative catch-up basis. If we cannot reasonably estimate when our performance obligations either are completed or become inconsequential, then revenue recognition is deferred until we can reasonably make such estimates. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method. Revenue is recognized for licenses or sales of functional intellectual property at the point in time the customer can use and benefit from the license. For performance obligations that are services, revenue is recognized over time proportionate to the costs that we have incurred to perform the services using the cost-to-cost input method.

Inventories

Inventories are recorded at the lower of cost or net realizable value. Cost is based on the first in, first out method. We regularly review inventory quantities on hand and write down to its net realizable value any inventory that we believe to be impaired. The determination of net realizable value requires judgment including consideration of many factors, such as estimates of future product demand, product net selling prices, current and future market conditions and potential product obsolescence, among others.

Share-Based Payments

We recognize compensation expense for all share-based awards made to employees, directors and consultants. The fair value of share-based awards is estimated at the grant date based on the fair value of the award and is recognized as expense, net of estimated pre-vesting forfeitures, ratably over the vesting period of the award.

We use the Black-Scholes option pricing model to estimate the fair value method of our awards. Calculating stock-based compensation expense requires the input of highly subjective assumptions, including the expected term of the share-based awards, stock price volatility, and pre-vesting forfeitures. We estimate the expected term of stock options granted for the years ended December 31, 2021 and 2020 based on the historical experience of similar awards, giving consideration to the contractual terms of the share-based awards, vesting schedules and the expectations of future employee behavior. We estimate the volatility of our common stock at the date of grant based on the historical volatility of our common stock. The assumptions used in calculating the fair value of stock-based awards represent our best estimates, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and we use different assumptions, our stock-based compensation expense could be materially different in the future. In addition, we are required to estimate the expected pre-vesting forfeiture rate and only recognize expense for those shares expected to vest. We estimate the pre-vesting forfeiture rate based on historical experience. If our actual forfeiture rate is materially different from our estimate, our stock-based compensation expense could be significantly different from what we have recorded in the current period.

Income Taxes

We make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes.

As part of the process of preparing our financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. This process involves us estimating our current tax exposure under the most recent tax laws and assessing temporary differences resulting from differing treatment of items for tax and accounting purposes.

We assess the likelihood that we will be able to recover our deferred tax assets. We consider all available evidence, both positive and negative, expectations and risks associated with estimates of future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. If it is not more likely than not that we will recover our deferred tax assets, we will increase our provision for taxes by recording a valuation allowance against the deferred tax assets that we estimate will not ultimately be recoverable.

Clinical Trial Accruals

We also record accruals for estimated ongoing clinical trial costs. Clinical trial costs represent costs incurred by CROs and clinical sites. These costs are recorded as a component of research and development expenses. Under our agreements, progress payments are typically made to investigators, clinical sites and CROs. We analyze the progress of the clinical trials, including levels of patient enrollment, invoices received and contracted costs when evaluating the adequacy of accrued liabilities. Significant judgments and estimates must be made and used in determining the accrued balance in any accounting period. Actual results could differ from those estimates under different assumptions. Revisions are charged to expense in the period in which the facts that give rise to the revision become known. The actual clinical trial costs for studies conducted in the past two years have not differed materially from the estimated projection of expenses.

Warrants Issued in Connection with Equity Financing

We generally account for warrants issued in connection with equity financings as a component of equity, unless there is a deemed possibility that we may have to settle warrants in cash. For warrants issued with deemed possibility of cash settlement, we record the fair value of the issued warrants as a liability at each reporting period and record changes in the estimated fair value as a non-cash gain or loss in the statements of operations and comprehensive loss.

Leases

We determine whether the arrangement is or contains a lease at inception. Operating lease right-of-use assets and lease liabilities are recognized at the present value of the future lease payments at commencement date. The interest rate implicit in lease contracts is typically not readily determinable, and therefore, we utilize our incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. Certain adjustments to the right-of-use asset may be required for items such as initial direct costs paid or incentives received.

Lease expense is recognized over the expected term on a straight-line basis. Operating leases are recognized on our balance sheet as right-of-use assets, operating lease liabilities, current and operating lease liabilities, non-current.

Liquidity and Capital Resources

We have funded our operations since inception primarily through the sale of our securities and the issuance of debt, as well as with proceeds from warrant and option exercises, corporate licensing and collaborative agreements, the sale of royalty rights, sales of Probuphine and government-sponsored research grants. At December 31, 2021, we had working capital of approximately $4.6 million compared to working capital of approximately $3.1 million at December 31, 2020.

	2021	2020
As of December 31:		
Cash and cash equivalents	$ 6,037	$ 5,413
Working capital	$ 4,560	$ 3,105
Current ratio	2.7:1	1.7:1
Years Ended December 31:		
Cash used in operating activities	$ (7,899)	$ (17,203)
Cash used in investing activities	$ (23)	$ (540)
Cash provided by financing activities	$ 8,841	$ 17,933

Net cash used in operating activities for the year ended December 31, 2021 consisted primarily of the net loss for the period of approximately $8.8 million and approximately $0.7 million related to gains on debt extinguishment and approximately $0.2 million related to net changes in other operating assets and liabilities. This was partially offset by an approximately $1.5 million of non-cash stock-based compensation and approximately $0.2 million of depreciation and amortization expense. Uses of cash in operating activities were primarily to fund our product development programs and administrative expenses.

Net cash used in investing activities for the year ended December 31, 2021 was related to purchases of equipment.

Net cash provided by financing activities for the year ended December 31, 2021 consisted primarily of approximately $8.8 million in proceeds from our equity offerings.

During the year ended December 31, 2020, we received approximately $7.2 million in cumulative net cash proceeds from the exercise of outstanding warrants to purchase 1,112,313 shares of our common stock.

In February 2022, we completed a registered direct offering with an accredited investor pursuant to which we issued an aggregate of 1,100,000 shares of our common stock and 2,274,242 pre-funded warrants to purchase shares of our common stock, with an exercise price of $0.001 per share. In a concurrent private placement, we sold unregistered pre-funded warrants to purchase an aggregate of 1,289,796 shares of common stock with an exercise price of $0.001 per share and issued unregistered five year and six month warrants to purchase an aggregate of 4,664,038 shares of common stock with an exercise price of $1.14. The net cash proceeds from these offerings were approximately $5.0 million after deduction of underwriting fees and other offering expenses.

In January 2021, we completed a registered direct offering pursuant to which we issued 2,725,000 shares of our common stock at an offering price of $3.55 per share and private placement warrants to purchase 2,725,000 shares of our common stock with an exercise price of $3.55 per share. We received net cash proceeds of approximately $8.8 million after the deduction of underwriting fees and other offering expenses.

In October 2020, we completed a public offering pursuant to which we sold 2,666,667 shares of our common stock and issued warrants to purchase 2,666,667 shares of our common stock with an exercise price of $3.00 per share. We received net cash proceeds of approximately $5.7 million, after deduction of underwriting fees, other offering expenses and the $1.6 million payment pursuant to the DSRA Agreement.

In October 2020, we entered into the DSRA Agreement with Molteni and Horizon to settle our outstanding debt obligations for $1.6 million in cash, the transfer of certain Probuphine assets to Molteni, including all of our manufacturing equipment, and the termination of our rights to future payments under the Purchase Agreement with Molteni. The DSRA Agreement, provided for the release to us of the remaining collateral.

In September 2020, we completed a registered direct offering with several institutional investors pursuant to which we issued 648,000 shares of our common stock at a price of $4.20 per share. We received net cash proceeds of approximately $2.4 million, after the deduction of underwriting fees and other offering expenses.

In January 2020, we completed a registered direct offering pursuant to which we issued 290,000 shares of our common stock at an offering price of $7.50 per share and private placement warrants to purchase 290,000 shares of our common stock with an exercise price of $7.50 per share. We received net cash proceeds of approximately $1.9 million, after the deduction of underwriting fees and other offering expenses.

At December 31, 2021, we had cash and cash equivalents of approximately $6.0 million, which we believe, together with the approximately $5.0 million of the net proceeds from the February 2022 Offerings, are sufficient to fund our planned operations to the end of the third quarter of 2022. We will require additional funds to finance our operations beyond such period; however, there can be no assurance that our efforts to obtain the funding required to continue our operations will be successful. There is substantial doubt about our ability to continue as a going concern.

Results of Operations

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

Revenues

	Years ended December 31,		
	2021	2020	Change
		(in thousands)	
Revenue:			
License revenue	$ 13	$ 11	$ 2
Product revenue	236	528	(292)
Grant revenue	1,277	4,299	(3,022)
Total revenue	$ 1,526	$ 4,838	$ (3,312)

License revenues for the years ended December 31, 2021 and 2020 reflect royalties received on sales of Probuphine by Knight in Canada.

Product revenues from continuing operations for the years ended December 31, 2021 and 2020 consisted of sales of our Probuphine product materials to Molteni and Knight for the EU and Canada, respectively. Revenue from sale of Probuphine in the U.S. has been reclassified to discontinued operations for the year ended December 31, 2020 (see Note 11 to the financial statements included in this report for more information).

The decrease in grant revenue was primarily due to decreased activities related to the NIDA grant for the development of a nalmefene implant.

Operating Expenses

	Years ended December 31,		
	2021	2020	Change
		(in thousands)	
Operating expenses:			
Cost of goods sold	$ 199	$ 472	$ (273)
Research and development	5,692	5,916	(224)
General and administrative	4,989	5,801	(812)
Total operating expenses	$ 10,880	$ 12,189	$ (1,309)

Cost of goods sold from continuing operations reflects costs and expenses associated with sales of Probuphine product materials to Molteni and Knight for the EU and Canada, respectively. Cost of goods sold related to the sale of Probuphine in the U.S. has been reclassified to discontinued operations for the year ended December 31, 2020 (see Note 11 to the financial statements included in this report for more information).

The decrease in research and development costs from continuing operations was primarily associated with reduced activities related to non-clinical studies required for the planned Investigational New Drug submission as part of our NIDA grant for the development of a nalmefene implant. This was partially offset by initial non-clinical proof of concept studies related to our TP-2021 implant program and increases in research and development personnel-related expenses. Other research and development expenses include internal operating costs such as research and development personnel-related expenses, non-clinical and clinical product development related travel expenses, and allocation of facility and corporate costs. Research and development expenses related to our U.S. Probuphine activities have been reclassified to discontinued operations for the year ended December 31, 2020 all periods presented (see Note 11 to the financial statements included in this report for more information). As a result of the risks and uncertainties inherently associated with pharmaceutical research and development activities described elsewhere in this document, we are unable to estimate the specific timing and future costs of our clinical development programs or the timing of material cash inflows, if any, from our product candidates. However, we anticipate that our research and development expenses will increase as we continue our current or any future ProNeura development programs to the extent these costs are not supported through grants or partners.

The decrease in general and administrative expenses from continuing operations was primarily related to the substantial non-recurring consulting, legal and other professional fees incurred in connection with the stockholder meetings held in 2020 which were partially offset by increases in non-cash stock-based compensation. Selling and marketing expenses related to the sale of Probuphine in the U.S. have been reclassified to discontinued operations for the year ended December 31, 2020 (see Note 11 to the financial statements included in this report for more information).

Other Expenses, Net

	Years ended December 31,		
	2021	2020	Change
		(in thousands)	
Other income (expense):			
Interest income (expense), net	$ 1	$ (769)	$ 770
Other expense, net	(84)	(258)	174
Non-cash gain (loss) on changes in the fair value of warrants	—	(923)	923
Non-cash gain on changes in the fair value of assets	—	1,975	(1,975)
Gain (loss) on debt extinguishment	661	(81)	742
Other income (expense), net	$ 578	$ (56)	$ 634

The increase in other income, net was primarily due to a gain on debt extinguishment resulting from the May 2021 forgiveness of our outstanding PPP Loan and decreases in interest expense resulting from the settlement of debt in October 2020. Net other expense for the year ended December 31, 2020 consisted primarily of non-cash losses related to changes in the fair value of warrants, interest expense related to our loans, losses related to debt extinguishment and expenses related to the issuance of the January 2020 Warrants. These were partially offset by non-cash gains on changes in the fair value of assets resulting from the settlement of debt in October 2020.

Discontinued Operations

Following our October 2020 decision to discontinue the commercialization of our Probuphine product in the U.S., we recorded a loss on discontinued operations for the year ended December 31, 2020 of approximately $10.8 million (see Note 11 to the financial statements included in this report for more information).

Net Loss and Net Loss per Share

Our net loss from continuing operations applicable to common stockholders for the year ended December 31, 2021 was approximately $8.8 million, or approximately $0.90 per share, compared to our net loss continuing operations applicable to common stockholders of approximately $7.4 million, or approximately $1.96 per share, for the comparable period in 2020. Our net loss from discontinued operations applicable to common stockholders for the year ended December 31, 2020 was approximately $10.8 million, or approximately $2.87 per share.

Off-Balance Sheet Arrangements

We have never entered into any off-balance sheet financing arrangements and we have never established any special purpose entities. We have not guaranteed any debt or commitments of other entities or entered into any options on non-financial assets.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 8. Financial Statements and Supplementary Data.

The response to this item is included in a separate section of this Report. See “Index to Financial Statements” on Page F-1.

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

None.

Item 9A. Controls and Procedures.

(a) *Evaluation of Disclosure Controls and Procedures* : Our principal executive and financial officers reviewed and evaluated the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rule 13a-15(e)) as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, our principal executive and financial officers concluded that our disclosure controls and procedures are effective in timely providing them with material information relating to Titan, as required to be disclosed in the reports we file under the Exchange Act.

(b) *Management's Annual Report on Internal Control Over Financial Reporting*:

Internal control over financial reporting refers to the process designed by, or under the supervision of, our principal executive officer and principal financial officer, and effected by our Board, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles, and includes those policies and procedures that:

(1) Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;

(2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorization of our management and directors; and

(3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisitions, use or disposition of our assets that could have a material effect on the financial statements.

Internal control over financial reporting cannot provide absolute assurance of achieving financial reporting objectives because of its inherent limitations. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting also can be circumvented by collusion or improper management overrides. Due to such limitations, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk. Management is responsible for establishing and maintaining adequate internal control over financial reporting for Titan.

Management has used the framework set forth in the report entitled *Internal Control—Integrated Framework* published by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), known as COSO, to evaluate the effectiveness of Titan's internal control over financial reporting. Based on this assessment, management has concluded that our internal control over financial reporting was effective as of December 31, 2021.

(c) *Changes in Internal Control Over Financial Reporting*: There were no changes in our internal control over financial reporting (as defined in Rules 13(a)-15(f) and 15(d)-15(f) under the Securities Act) during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

PART III

Item 10. Directors; Executive Officers and Corporate Governance

Set forth below are the name, age and position and a brief account of the business experience of each of our executive officers and directors:

Name	Age	Office	Director Since
Marc Rubin, M.D.	67	Executive Chairman of the Board	November 2007
Katherine Beebe DeVarney, Ph.D.	61	President, Chief Operating Officer and Director	December 2019
Joseph A. Akers (1)	76	Director	November 2014
M. David MacFarlane, Ph.D. (1)	81	Director	May 2002
James R. McNab, Jr. (1)	78	Director	November 2014

(1) Member of audit, compensation and nominating and governance committees

Marc Rubin, M.D. served as our President and Chief Executive from October 2007 until December 2008 and was re-engaged as our Executive Chairman in May 2009. Until February 2007, Dr. Rubin served as Head of Global Research and Development for Bayer Schering Pharma, as well as a member of the Executive Committee of Bayer Healthcare and the Board of Management of Bayer Schering Pharma. Prior to the merger of Bayer Pharmaceuticals and Schering AG in June 2006, Dr. Rubin was a member of the Executive Board of Schering AG since joining us in October 2003, as well as Chairman of Schering Berlin Inc. and President of Berlex Pharmaceuticals, a division of Schering AG. From 1990 until August 2003, Dr. Rubin was employed by GlaxoSmithKline where he held positions of increasing responsibility in global clinical and commercial development overseeing programs in the United States, Europe, Asia and Latin America. From 2001 through 2003, he was Senior Vice President of Global Clinical Pharmacology & Discovery Medicine. Dr. Rubin holds an M.D. from Cornell University Medical College. Dr. Rubin currently serves on the board of directors of Curis Inc. and Galectin Therapeutics. Based on Dr. Rubin's position as our Executive Chairman, his extensive senior management experience and service on boards of directors in the biotechnology and pharmaceutical industries and his medical background, our Board believes that Dr. Rubin has the appropriate set of skills to serve as a member of the Board.

Katherine Beebe DeVarney, Ph.D. joined Titan in February 2007 and currently serves as our President and Chief Operating Officer. She has been a member of the Board since December 2019. During her 15 years with us, she has served in various scientific and medical research and development capacities, with primary responsibility for oversight of our product research and development, Regulatory Affairs, and Medical Affairs. Dr. Beebe DeVarney has 26 years of experience as a Neuroscientist in the pharmaceutical industry, including positions of increasing responsibility with SmithKline Beecham, GlaxoSmithKline, Merck, and Corcept Therapeutics. Prior to her pharmaceutical career, Dr. Beebe DeVarney was a hospital-based clinician and worked in academic medicine for 10 years. She received her Ph.D. in Clinical Neuropsychology from George Mason University and completed a two-year post-doctoral fellowship at Graduate Hospital and the University of Pennsylvania. Based on Dr. Beebe DeVarney's extensive knowledge of the medical, research, and regulatory requirements of product development programs, our Board believes that Dr. Beebe DeVarney has the appropriate set of skills to serve as member of the Board.

Joseph A. Akers was employed in various capacities by Bayer Corporation, Bayer Healthcare and certain related entities, including as president of the Hematology/Cardiology Business Unit from 2004 to 2007, president and chief executive officer of Bayer Business and Corporate Services from July 2002 through 2003 and executive vice president and chief administrative and financial officer from 1999 to July 2002. Mr. Akers received a B.S. in marketing and an M.B.A. in finance from the University of California at Berkeley. Based on Mr. Akers' extensive management experience in the pharmaceutical industry, particularly in the areas of administration and finance, our Board believes that Mr. Akers has the appropriate set of skills to serve as a member of the Board.

M. David MacFarlane, Ph.D. served as Vice President and Responsible Head of Regulatory Affairs of Genentech, Inc. from 1989 until his retirement in August 1999. Prior to joining Genentech, Inc., he served in various positions with Glaxo Inc., last as Vice President of Regulatory Affairs. Based on Dr. MacFarlane's management experience in the pharmaceutical industry, particularly in the area of clinical and regulatory affairs, our Board believes that Dr. MacFarlane has the appropriate set of skills to serve as a member of the Board.

James R. McNab, Jr. has served since June 2014 as chief executive officer of JT Pharmaceuticals, Inc., a privately-held drug discovery company he founded. Mr. McNab served as executive chairman of FirstString Research, Inc., a privately-held biopharmaceutical company from 2009 to 2019. Mr. McNab has co-founded several privately-held companies, including Sontra Medical Corporation, a drug delivery company, and Parker Medical Associates, a manufacturer and worldwide supplier of orthopedic and sports-related products. He received a B.A. in economics from Davidson College and an M.B.A. from the University of North Carolina at Chapel Hill. Based on Mr. McNab's extensive management experience in the pharmaceutical industry, our Board believes that Mr. McNab has the appropriate set of skills to serve as a member of the Board.

As indicated above, each of our directors has extensive management and operational experience in one or more facets of the pharmaceutical industry, including research, product development, clinical and regulatory affairs, manufacturing and sales and marketing, providing our company with the leadership needed by a biotechnology company in all stages of its development.

Directors serve until the next annual meeting or until their successors are elected and qualified. Officers serve at the discretion of the Board, subject to rights, if any, under contracts of employment. See "Item 11. Executive Compensation—Employment Agreements."

Board Leadership Structure

Currently, our principal executive officer and chairman of the Board positions are held by Marc Rubin, MD.

Code of Ethics

We adopted a Code of Business Conduct and Ethics (the "Code") in February 2013 that applies to all directors, officers and employees. The Code is filed as an exhibit to this Annual Report on Form 10-K and is available on our website at *www.titanpharm.com.* A copy of our code of ethics will also be provided to any person without charge, upon written request sent to us at our offices located at 400 Oyster Point Blvd, Suite 505, South San Francisco, California 94080.

Changes in Director Nomination Process for Stockholders

None.

Item 11. Executive Compensation

SUMMARY COMPENSATION TABLE

The following table provides information regarding the compensation paid during the years ended December 31, 2021 and 2020 to each of the executive officers named below, who are collectively referred to as "named executive officers" elsewhere in this report.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Options Awards ($) (1)	Stock Awards ($) (1)	All Other Compensation ($)	Total Compensation ($)
Marc Rubin, MD(2)	2021	$ 390,244	$ —	$ 494,003	$ —	$ —	$ 884,247
Executive Chairman	2020	$ 250,521	$ —	$ —	$ —	$ —	$ 250,521
Sunil Bhonsle (2)(3)	2021	$ —	$ —	$ 32,934	$ —	$ 20,800 (5)	$ 53,734
Chief Executive Officer, President and Principal Financial Officer	2020	$ 239,063	$ —	$ —	$ —	$ 65,385 (4)	$ 304,448
Katherine Beebe DeVarney, Ph.D. (3)	2021	$ 383,641	$ —	$ 494,003	$ —	$ —	$ 877,644
Executive Vice President and Chief Scientific Officer	2020	$ 365,000	$ —	$ —	$ —	$ —	$ 365,000
Dane Hallberg (6)	2021	$ —	$ —	$ —	$ —	$ —	$ —
Executive Vice President and Chief Commercial Officer	2020	$ 124,856	$ —	$ —	$ —	$ 175,000 (7)	$ 299,856

(1) Amounts shown represent the grant date fair value computed in accordance with FASB ASC 718. The assumptions used by us with respect to the valuation of option grants and stock awards are set forth in Note 9 to the financial statements.
(2) Beginning in January 2020, our Chief Executive Officer and our Executive Chairman agreed to a 50% reduction in their base salaries through June 30, 2020.
(3) In October 2020, Mr. Bhonsle retired as an executive and Dr. Beebe DeVarney assumed the roles of President and Chief Operating Officer.
(4) Amounts shown represent the payment of accrued vacation at time of retirement.
(5) Amounts shown represent payments for consulting services.
(6) Mr. Hallberg's employment terminated in April 2020.
(7) Amounts shown represent severance payments.

Employee Benefits Plans

The principal purpose of our stock incentive plans is to attract, motivate, reward and retain selected employees, consultants and directors through the granting of stock-based compensation awards. The stock option plans provide for a variety of awards, including non-qualified stock options, incentive stock options (within the meaning of Section 422 of the Code), stock appreciation rights, restricted stock awards, performance-based awards and other stock-based awards.

2002 Stock Incentive Plan

In July 2002, we adopted the 2002 Stock Incentive Plan, or the 2002 Plan. Under the 2002 Plan, as amended, a total of approximately 7,234 shares of our common stock were authorized for issuance to employees, officers, directors, consultants, and advisers. The 2002 Plan expired by its terms in July 2012. On December 31, 2021, options to purchase an aggregate of 1,324 shares of our common stock were outstanding under the 2002 Plan.

2014 Incentive Plan

In February 2014, our Board adopted the 2014 Incentive Plan, or the 2014 Plan, pursuant to which 2,526 shares of our common stock were authorized for issuance to employees, directors, officers, consultants and advisors. On December 31, 2021, options to purchase 1,272 shares of our common stock were outstanding under the 2014 Plan.

2015 Omnibus Equity Incentive Plan

In August 2015, our stockholders approved the 2015 Omnibus Equity Incentive Plan, or the 2015 Plan. The 2015 Plan, as amended, authorized a total of 1,000,000 shares of our common stock for issuance to employees, directors, officers, consultants and advisors. On December 31, 2021, options to purchase 679,064 shares of our common stock were outstanding under the 2015 Plan.

Outstanding Equity Awards at Fiscal Year-End

The following table summarizes the number of securities underlying outstanding plan awards for each named executive officer as of December 31, 2021.

	Option Awards			
Name	**Number of Securities Underlying Unexercised Awards (#) Exercisable**	**Number of Securities Underlying Unexercised Awards (#) Unexercisable**	**Exercise Price ($)**	**Expiration Date**
Marc Rubin, M.D.	253	—	1,137.60	1/3/2022
	203	—	594.00	3/16/2025
	506	—	918.00	12/14/2025
	440	—	918.00	02/02/2026
	390	—	702.00	02/13/2027
	946	—	174.60	03/07/2028
	2,779	—	52.50	4/2/2029
	91,667	58,333	4.02	02/10/2031
Sunil Bhonsle	304	—	1,137.60	1/3/2022
	243	—	594.00	3/16/2025
	506	—	918.00	12/14/2025
	496	—	918.00	2/2/2026
	445	—	702.00	02/13/2027
	945	—	174.60	03/7/2028
	2,778	—	52.50	4/2/2029
	—	10,000	4.02	02/10/2031
Katherine Beebe DeVarney, Ph.D.	152	—	46.58	1/3/2022
	142	—	594.00	3/16/2025
	223	—	46.58	12/14/2025
	223	—	46.58	2/13/2027
	945	—	174.00	3/7/2028
	91,667	58,333	4.02	02/10/2031

In February 2021, Dr. Rubin and Dr. Beebe DeVarney were each granted options to purchase 150,000 shares of common stock. The options vest over 24 months with 50% of the awarded options vesting on the six-month anniversary of the Grant Date with the remaining balance vesting over the remaining eighteen months.

There were no options exercised by our named executive officers during 2021.

Pension Benefits

We do not sponsor any qualified or non-qualified defined benefit plans.

Nonqualified Deferred Compensation

We do not maintain any non-qualified defined contribution or deferred compensation plans. The Compensation Committee, which is comprised solely of "outside directors" as defined for purposes of Section 162(m) of the Code, may elect to provide our officers and other employees with non-qualified defined contribution or deferred compensation benefits if the Compensation Committee determines that doing so is in our best interests. We sponsor a tax qualified defined contribution 401(k) plan in which Dr. Rubin, Dr. Beebe DeVarney and Mr. Bhonsle participated.

Employment Agreements

In April 2019, we entered into employment agreements with Dr. Rubin and Mr. Bhonsle providing for base annual salaries of $325,000 and 425,000, respectively. The employment agreements contain the following terms:

- Bonuses. The executive may, at the sole discretion of the board of directors or the compensation committee, be considered for an annual bonus of up to 50% of his then base salary, payable in cash or awards under our equity incentive plan.

- Term; Termination. The Employment Agreements have a 24-month term expiring on April 1, 2021 but may be terminated by us for any reason at any time. In the event of termination by us without cause or by the executive for good reason not in connection with a change of control, as those terms are defined in such agreements, the executive is entitled to (i) severance for the greater of 12 months or the balance of the term, (ii) a pro rata portion of any annual bonus, (iii) 12 months of COBRA payments, and (iv) the immediate accelerated vesting of any unvested restricted shares and stock options. In the event such a termination is within 30 days prior to or six months following a change of control, the executive is entitled to an additional six months of COBRA payments.

- Restrictive Covenants. The Employment Agreements contain one-year post-termination noncompetition and non-solicitation provisions.

- Clawback. The Employment Agreements contain a two-year post-termination clawback of benefits provision in the event of a restatement of financial results upon which such benefits were based.

In November 2018, we entered into an employment agreement with Dr. Beebe DeVarney providing for a base annual salary of $365,000. The employment agreement contains the following terms:

- Bonuses. The executive may, at the sole discretion of the board of directors or the compensation committee, be considered for an annual bonus of up to 50% of her then base salary, payable in cash or awards under our equity incentive plan.

- Term; Termination. The Employment Agreement may be terminated by us for any reason at any time. In the event of termination by us without cause or by the executive for good reason or in connection with a change of control, as those terms are defined in such agreements, the executive is entitled to (i) severance for 12 months following the termination date, (ii) a pro rata portion of any annual bonus, (iii) 12 months of COBRA payments, and (iv) the immediate accelerated vesting of any unvested restricted shares and stock options.

- Restrictive Covenants. The Employment Agreement contains six-month post-termination noncompetition and non-solicitation provisions.

In October 2020, Mr. Bhonsle retired. In February 2021, Dr. Rubin's and Dr. Beebe DeVarney's employment agreements were amended to provide for annual salaries of $395,000 and $385,000, respectively, and the term of Dr. Rubin's agreement was extended to September 30, 2021. In October 2021, Dr. Rubin's agreement was further extended to December 31, 2022. All other agreement terms remain substantially the same.

In September 2018, we entered into an employment agreement with Mr. Hallberg providing for a base annual salary of $350,000. Mr. Hallberg's employment terminated in April 2020, and he received $175,000 related to severance compensation.

DIRECTOR COMPENSATION

Summary of Director Compensation

The following table summarizes compensation that our non-employee directors earned during 2021 for services as members of our Board.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Options Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)	Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Joseph A. Akers (2)	$ 62,500	$ —	$ 82,334	$ —	$ —	$ —	$ 144,834
M. David MacFarlane, Ph.D. (3)	$ 62,500	—	$ 82,334	—	—	—	$ 144,834
James R. McNab, Jr. (2)	$ 62,500	—	$ 82,334	—	—	—	$ 144,834

(1) Amounts shown represent the grant date fair value computed in accordance with FASB ASC 718. The assumptions used by us with respect to the valuation of option grants and stock awards are set forth in Note 9 to the financial statements.
(2) The aggregate number of option awards held at December 31, 2021 was 25,207.
(3) The aggregate number of option awards held at December 31, 2021 was 25,251.

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

The following table sets forth as of March 23 2022, the number of shares of our common stock beneficially owned by (i) each person who is known by us to be the beneficial owner of more than five percent of our common stock; (ii) each director and director nominee; (iii) each of the named executive officers in the Summary Compensation Table; and (iv) all directors and executive officers as a group. As of March 23, 2022, we had 12,039,421 shares of common stock issued and outstanding.

Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission (the "SEC") and generally includes voting or investment power with respect to securities. Unless otherwise indicated, the stockholders listed in the table have sole voting and investment power with respect to the shares indicated.

Name and Address of Beneficial Owner (1)	Shares Beneficially Owned (2)	Percent of Shares Beneficially Owned
Joseph A. Akers	27,504 (3)	*
Katherine DeVarney, Ph.D.	114,113 (4)	*
M. David MacFarlane, Ph.D.	26,237 (5)	*
James R. McNab, Jr.	79,009 (6)	*
Marc Rubin, M.D.	123,090 (7)	1.0 %
Armistice Capital Master Fund Ltd.(8)	8,430,736 (9)	9.99 %(10)
All executive officers and directors as a group (5) persons	369,953	3.0 %

* Less than one percent.

(1) Unless otherwise indicated, the address of such individual is c/o Titan Pharmaceuticals, Inc., 400 Oyster Point Boulevard, Suite 505, South San Francisco, California 94080.

(2) In computing the number of shares beneficially owned by a person and the percentage ownership of a person, shares of our common stock subject to options held by that person that are currently exercisable or exercisable within 60 days of March 23, 2022 are deemed outstanding. Such shares, however, are not deemed outstanding for purposes of computing the percentage ownership of each other person. Except as indicated in the footnotes to this table and pursuant to applicable community property laws, the persons named in the table have sole voting and investment power with respect to all shares of common stock.

(3) Includes (i) 25,207 shares issuable upon exercise of outstanding options and (ii) 1,112 shares issuable upon exercise of outstanding warrants.

(4) Includes 114,033 shares issuable upon exercise of outstanding options.

(5) Includes (i) 25,220 shares issuable upon exercise of outstanding options and (ii) 445 shares issuable upon exercise of outstanding warrants.

(6) Includes (i) 25,207 shares issuable upon exercise of outstanding options, (ii) 1,112 shares issuable upon exercise of outstanding warrants and (iii) 51,021 shares owned by JT Pharma. Mr. McNab is a principal of JT Pharma and has voting and dispositive power with respect to these shares.

(7) Includes (i) 117,764 shares issuable upon exercise of outstanding options and (ii) 2,223 shares issuable upon exercise of outstanding warrants.

(8) The securities are directly held by Armistice Capital Master Fund Ltd. (the "Master Fund"), a Cayman Islands exempted company, and may be deemed to be indirectly beneficially owned by Armistice Capital, LLC ("Armistice"), as the investment manager of the Master Fund; and (ii) Steven Boyd, as the Managing Member of Armistice Capital. Armistice and Steven Boyd disclaim beneficial ownership of the reported securities except to the extent of their respective pecuniary interest therein. The address of the Master Fund is c/o Armistice Capital, LLC, 510 Madison Avenue, 7th Floor, New York, NY 10022.

(9) Includes 1,300,000 shares underlying registered pre-funded warrants, 1,289,796 shares underlying unregistered pre-funded warrants, 4,664,038 shares underlying unregistered warrants, and 50,000 shares underlying other registered warrants.

(10) Reflects the beneficial ownership limitations set forth in the warrants that prohibit the Master Fund from exercising any portion thereof if, following the exercise, the Master Fund's ownership of our common stock would exceed the relevant warrant's ownership limitation of either 4.99% or 9.99%.

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

Certain Relationships and Related Transactions.

None.

Independence of Directors

The following members of our Board meet the independence requirements and standards currently established by the Nasdaq: Joseph A. Akers, M. David MacFarlane and James R. McNab, Jr.

Board Committees

Our Board has established the following three standing committees: audit committee; compensation committee; and nominating and governance committee, or governance committee.

The audit committee was formed in compliance with Section 3(a)(58)(A) of the Exchange Act and consists of Joseph A. Akers, M. David MacFarlane and James R. McNab, Jr., each of whom meets the independence requirements and standards currently established by Nasdaq and the SEC. In addition, the Board has determined that Mr. Akers is an "audit committee financial expert" and "independent" as defined under the relevant rules of the SEC and Nasdaq. The audit committee assists the Board by overseeing the performance of the independent auditors and the quality and integrity of Titan's internal accounting, auditing and financial reporting practices. The audit committee is responsible for retaining (subject to stockholder ratification) and, as necessary, terminating, the independent auditors, annually reviews the qualifications, performance and independence of the independent auditors and the audit plan, fees and audit results, and pre-approves audit and non-audit services to be performed by the auditors and related fees.

The compensation committee makes recommendations to the Board concerning salaries and incentive compensation for our officers, including our Principal Executive Officer, and employees and administers our stock option plans. The compensation

committee consists of Joseph A. Akers, M. David MacFarlane and James R. McNab, Jr., each of whom meets the independence requirements and standards currently established by Nasdaq.

The purpose of the governance committee is to assist the Board in identifying qualified individuals to become Board members, in determining the composition of the Board and in monitoring the process to assess Board effectiveness. The governance committee consists of M. David MacFarlane and Joseph A. Akers, each of whom meets the independence requirements and standards currently established by Nasdaq.

The charters for the audit, compensation and governance committees, which have been adopted by our Board, contain detailed descriptions of the committees' duties and responsibilities and are available in the Investor Relations section of our website at *www.titanpharm.com.*

Role of the Board in Risk Oversight

Our audit committee is primarily responsible for overseeing our risk management processes on behalf of the full Board. The audit committee receives reports from management at least quarterly regarding our assessment of risks. In addition, the audit committee reports regularly to the full Board, which also considers our risk profile. The audit committee and the full Board focus on the most significant risks we face and our general risk management strategies. While the Board oversees our risk management, management is responsible for day-to-day risk management processes. Our Board expects management to consider risk and risk management in each business decision, to proactively develop and monitor risk management strategies and processes for day-to-day activities and to effectively implement risk management strategies adopted by the audit committee and the Board. We believe this division of responsibilities is the most effective approach for addressing the risks we face.

Board Meetings

Our business and affairs are managed under the direction of our Board, which is currently composed of five members. The primary responsibilities of the Board are to provide oversight, strategic guidance, counseling and direction to our management. During the fiscal year ended December 31, 2021, the Board met six times and took action by written consent one time. No director attended fewer than 75% of the meetings of the Board and Board committees of which the director was a member.

Item 14. Principal Accounting Fees and Services.

Aggregate fees billed by WithumSmith+Brown, formerly OUM & Co. LLP, or Withum, an independent registered public accounting firm, during the fiscal years ended December 31, 2021 and 2020 were as follows:

	2021	2020
Audit Fees	$ 297,850	$ 385,546
Audit-Related Fees	—	—
Tax Fees	48,850	47,560
Total	$ 346,700	$ 433,106

Audit Fees —This category includes aggregate fees billed by our independent auditors for the audit of our annual financial statements, audit of management's assessment and effectiveness of internal controls over financial reporting, review of financial statements included in our quarterly reports on Form 10-Q and services that are normally provided by the auditor in connection with statutory and regulatory filings for those fiscal years, including consents and comfort letters.

Audit-Related Fees —This category consists of services by our independent auditors that, including accounting consultations on transaction related matters, are reasonably related to the performance of the audit or review of our financial statements and are not reported above under Audit Fees.

Tax Fees —This category consists of professional services rendered for tax compliance and preparation of our corporate tax returns and other tax advice.

All Other Fees —During the years ended December 31, 2021 and 2020, Withum did not incur any fees for other professional services.

The audit committee reviewed and approved all audit and non-audit services provided by Withum and concluded that these services were compatible with maintaining its independence. The audit committee approved the provision of all non-audit services by Withum.

Pre-Approval Policies and Procedures

In accordance with the SEC's auditor independence rules, the audit committee has established the following policies and procedures by which it approves in advance any audit or permissible non-audit services to be provided to us by our independent auditor.

Prior to the engagement of the independent auditors for any fiscal year's audit, management submits to the audit committee for approval lists of recurring audits, audit-related, tax and other services expected to be provided by the independent auditors during that fiscal year. The audit committee adopts pre-approval schedules describing the recurring services that it has pre-approved, and is informed on a timely basis, and in any event by the next scheduled meeting, of any such services rendered by the independent auditor and the related fees.

The fees for any services listed in a pre-approval schedule are budgeted, and the audit committee requires the independent auditor and management to report actual fees versus the budget periodically throughout the year. The audit committee will require additional pre-approval if circumstances arise where it becomes necessary to engage the independent auditor for additional services above the amount of fees originally pre-approved. Any audit or non-audit service not listed in a pre-approval schedule must be separately pre-approved by the audit committee on a case-by-case basis.

Every request to adopt or amend a pre-approval schedule or to provide services that are not listed in a pre-approval schedule must include a statement by the independent auditors as to whether, in their view, the request is consistent with the SEC's rules on auditor independence.

The audit committee will not grant approval for:

- any services prohibited by applicable law or by any rule or regulation of the SEC or other regulatory body applicable to us;
- provision by the independent auditors to us of strategic consulting services of the type typically provided by management consulting firms; or
- the retention of the independent auditors in connection with a transaction initially recommended by the independent auditors, the tax treatment of which may not be clear under the Internal Revenue Code and related regulations and which it is reasonable to conclude will be subject to audit procedures during an audit of our financial statements.

Tax services proposed to be provided by the auditor to any director, officer or employee of Titan who is in an accounting role or financial reporting oversight role must be approved by the audit committee on a case-by-case basis where such services are to be paid for by us, and the audit committee will be informed of any services to be provided to such individuals that are not to be paid for by us.

In determining whether to grant pre-approval of any non-audit services in the "all other" category, the audit committee will consider all relevant facts and circumstances, including the following four basic guidelines:

- whether the service creates a mutual or conflicting interest between the auditor and us;
- whether the service places the auditor in the position of auditing his or her own work;
- whether the service results in the auditor acting as management or an employee of our company; and
- whether the service places the auditor in a position of being an advocate for our company.

PART IV

Item 15. Exhibits and Financial Statements Schedules.

(a) 1. Financial Statements

An index to Financial Statements appears on page F-1.

2. Schedules

All financial statement schedules are omitted because they are not applicable, not required under the instructions or all the information required is set forth in the financial statements or notes thereto.

Item 16. Form 10-K Summary

None

TITAN PHARMACEUTICALS, INC.
INDEX TO FINANCIAL STATEMENTS

	Page
Report of Independent Registered Public Accounting Firm (*PCAOB ID 100*)	F-2
Report of Independent Registered Public Accounting Firm (*PCAOB ID 252*)	F-4
Balance Sheets as of December 31, 2021 and 2020	F-5
Statements of Operations and Comprehensive Loss for the years ended December 31, 2021 and 2020	F-6
Statements of Stockholders' Equity for the years ended December 31, 2021 and 2020	F-7
Statements of Cash Flows for the years ended December 31, 2021 and 2020	F-8
Notes to Financial Statements	F-9

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Titan Pharmaceuticals, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheet of Titan Pharmaceuticals, Inc. (the "Company") as of December 31, 2021, the related statements of operations and comprehensive loss, stockholders' equity, and cash flows for the year ended December 31, 2021, and the related notes to the financial statements (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 at December 31, 2021, and the results of its operations and its cash flows for the year ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

The financial statements of the Company as of and for the year ended December 31, 2020 were audited by OUM & Co. LLP, who joined WithumSmith+Brown, PC on July 15, 2021, and rendered their opinion on such statements on March 31, 2021.

Going Concern Uncertainty

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1, the Company has had recurring losses from operations, an accumulated deficit at December 31, 2021, and insufficient cash at December 31, 2021 to fund operations for twelve months from the date of issuance. All of these matters raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

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 audit. 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the 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 audit, 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 audit 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 audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

Critical Audit Matters

Critical audit matters are matters arising from the current period audit of the financial statements that were 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. We determined that there are no critical audit matters.

/s/ WithumSmith+Brown, PC

We have served as the Company's auditor since 2004.

San Francisco, California
March 25, 2022

PCAOB ID Number 100

Report of Independent Registered Public Accounting Firm

Stockholders and Board of Directors
Titan Pharmaceuticals, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheet of Titan Pharmaceuticals, Inc. (the Company) as of December 31, 2020, and the related statement of operations and comprehensive loss, stockholders' equity, and cash flows for the year ended December 31, 2020, and the related notes to the financial statements (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 at December 31, 2020, and the results of its operations and its cash flows for the year ended December 31, 2020, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1, the Company has had recurring losses and negative operating cash flows since inception, an accumulated deficit at December 31, 2020, and insufficient cash and loan proceeds at December 31, 2020 to fund operations for twelve months from the date of issuance. All of these matters raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

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 audit. 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the 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 audit 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 audit 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 audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ OUM & CO. LLP

We served as the Company's auditor since 2004.

San Francisco, California
March 31, 2021

TITAN PHARMACEUTICALS, INC.
BALANCE SHEETS

	December 31, 2021	December 31, 2020
	(In thousands, except share and per share data)	
Assets		
Current assets:		
Cash and cash equivalents	$ 6,037	$ 5,413
Restricted cash	295	—
Receivables	112	884
Inventory	293	328
Prepaid expenses and other current assets	480	522
Discontinued operations - current assets	12	181
Total current assets	7,229	7,328
Property and equipment, net	420	618
Other assets	48	—
Operating lease right-of-use asset	297	141
Total assets	$ 7,994	$ 8,087
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 795	$ 1,253
Accrued clinical trials expenses	9	214
Other accrued liabilities	314	319
Operating lease liability, current	112	150
Current portion of long-term debt	—	327
Deferred grant revenue	295	—
Discontinued operations - current liabilities	1,144	1,960
Total current liabilities	2,669	4,223
Long-term debt, net	—	332
Operating lease liability, non-current	187	—
Total liabilities	2,856	4,555
Commitments and contingencies (Note 5)		
Stockholders' equity:		
Preferred stock, $0.001 par value per share; 5,000,000 shares authorized, none issued or outstanding at December 31, 2021 and 2020.	—	—
Common stock, at amounts paid-in, $0.001 par value per share; 225,000,000 shares authorized 9,914,158 and 7,139,068 shares issued and outstanding at December 31, 2021 and 2020, respectively.	10	7
Additional paid-in capital	381,183	370,804
Accumulated deficit	(376,055)	(367,279)
Total stockholders' equity	5,138	3,532
Total liabilities and stockholders' equity	$ 7,994	$ 8,087

See accompanying notes to financial statements.

TITAN PHARMACEUTICALS, INC.
STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

	Years ended December 31,	
	2021	2020
	(In thousands, except per share data)	
Revenue:		
License revenue	$ 13	$ 11
Product revenue	236	528
Grant revenue	1,277	4,299
Total revenue	1,526	4,838
Operating expenses:		
Cost of goods sold	199	472
Research and development	5,692	5,916
General and administrative	4,989	5,801
Total operating expenses	10,880	12,189
Loss from operations	(9,354)	(7,351)
Other income (expense):		
Interest income (expense), net	1	(769)
Other expense, net	(84)	(258)
Non-cash loss on changes in the fair value of warrants	—	(923)
Non-cash gain on changes in the fair value of assets	—	1,975
Non-cash gain (loss) on debt extinguishment	661	(81)
Other income (expense), net	578	(56)
Loss from continuing operations	(8,776)	(7,407)
Loss on discontinued operations	—	(10,835)
Net loss and comprehensive loss	$ (8,776)	$ (18,242)
Basic and diluted net loss per common share from continuing operations	$ (0.90)	$ (1.96)
Basic and diluted net loss per common share on discontinued operations	$ —	$ (2.87)
Weighted average shares used in computing basic and diluted net loss per common share	9,730	3,773

See accompanying notes to financial statements.

TITAN PHARMACEUTICALS, INC.
STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	Preferred Stock Shares	Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
Balances at December 31, 2019	—	$ —	1,913	2	$ 350,468	$ (349,037)	$ 1,433
Net loss	—	—	—	—	—	(18,242)	(18,242)
Issuance of common stock, net	—	—	3,605	4	10,190	—	10,194
Issuance of common stock upon exercise of warrants, net	—	—	1,563	2	7,241	—	7,243
Reverse stock split adjustments	—	—	58	(1)	1	—	—
Reclassification of liability-classified warrants to equity	—	—	—	—	2,897	—	2,897
Stock-based compensation	—	—	—	—	7	—	7
Balances at December 31, 2020	—	$ —	7,139	$ 7	$ 370,804	$ (367,279)	$ 3,532
Net loss	—	—	—	—	—	(8,776)	(8,776)
Issuance of common stock, net	—	—	2,775	3	8,838	—	8,841
Amortization of restricted stock	—	—	—	—	36	—	36
Stock-based compensation	—	—	—	—	1,505	—	1,505
Balances at December 31, 2021	—	$ —	9,914	$ 10	$ 381,183	$ (376,055)	$ 5,138

See accompanying notes to financial statements.

TITAN PHARMACEUTICALS, INC.
STATEMENTS OF CASH FLOWS

	Years Ended December 31,	
	2021	2020
	(In thousands)	
Cash flows from operating activities:		
Net loss	$ (8,776)	$ (18,242)
Adjustments to reconcile net loss to net cash used in operating activities:		
Non-cash gain on difference between fair and carrying value of assets transferred in debt settlement	—	(1,975)
Depreciation and amortization	221	292
Non-cash interest expense	2	498
Non-cash loss on changes in fair value of warrants	—	923
Non-cash loss (gain) on debt extinguishment	(661)	81
Stock-based compensation	1,541	7
Finance costs for issuance of warrants	—	211
Other	(7)	(16)
Changes in operating assets and liabilities:		
Receivables	772	186
Inventory	35	287
Prepaid expenses and other assets	163	391
Accounts payable	(1,191)	1,101
Accrued sales allowances	—	(747)
Other accrued liabilities	(293)	(200)
Deferred revenue	295	—
Net cash used in operating activities	(7,899)	(17,203)
Cash flows from investing activities:		
Purchases of furniture and equipment	(23)	(540)
Net cash used in investing activities	(23)	(540)
Cash flows from financing activities:		
Proceeds from equity offerings	8,841	11,636
Net loan proceeds	—	654
Proceeds from the exercise of warrants	—	7,243
Payments on long-term debt	—	(1,600)
Net cash provided by financing activities	8,841	17,933
Net increase in cash and cash equivalents	919	190
Cash, and cash equivalents at beginning of year	5,413	5,223
Cash, cash equivalents and restricted cash at end of year	$ 6,332	$ 5,413
Supplemental disclosure of cash flow information		
Interest paid	$ —	$ 295
Right of use asset obtained in exchange for lease liability, net of amortization	$ 149	$ (272)
Retirement of property and equipment	$ 1,372	$ —
Accumulated depreciation on retired property and equipment	$ (1,372)	$ —

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

	2021	2020
Cash and cash equivalents	$ 6,037	$ 5,413
Restricted cash	295	—
Cash, cash equivalents and restricted cash shown in the statements of cash flows	$ 6,332	$ 5,413

See accompanying notes to financial statements.

TITAN PHARMACEUTICALS, INC.
NOTES TO FINANCIAL STATEMENTS

1. Organization and Summary of Significant Accounting Policies

The Company

We are a pharmaceutical company developing therapeutics utilizing our proprietary long-term drug delivery platform, ProNeura®, for the treatment of select chronic diseases for which steady state delivery of a drug has the potential to provide an efficacy and/or safety benefit. ProNeura consists of a small, solid implant made from a mixture of ethylene-vinyl acetate, or EVA, and a drug substance. The resulting product is a solid matrix that is designed to be administered subdermally in a brief, outpatient procedure and is removed in a similar manner at the end of the treatment period. These procedures may be performed by trained health care providers, or HCPs, including licensed and surgically qualified physicians, nurse practitioners, and physician's assistants in a HCP's office or other clinical setting.

Our first product based on our ProNeura technology was Probuphine® (buprenorphine implant), which is approved in the United States, Canada and the European Union, or EU, for the maintenance treatment of opioid use disorder in clinically stable patients taking 8 mg or less a day of oral buprenorphine. While Probuphine continues to be commercialized in Canada and in the EU (as Sixmo™) by other companies that have either licensed or acquired the rights from Titan, we discontinued commercialization of the product in the U.S. during the fourth quarter of 2020. Discontinuation of our commercial operations has allowed us to focus our limited resources on important product development programs and transition back to a product development company.

In November 2020, pursuant to prior stockholder authorization, our board of directors, or the Board, effected a reverse split of the outstanding shares of our common stock at a ratio of one share for every thirty shares then outstanding, or the Reverse Split. Pursuant to their respective terms, the number of shares underlying our outstanding options and warrants was reduced and their respective exercise prices increased by the Reverse Split ratio. The number of shares of common stock authorized and the par value of $0.001 per share did not change as a result of the Reverse Split. All share and per share amounts contained in this Annual Report on Form 10-K give retroactive effect to the Reverse Split.

The accompanying financial statements have been prepared assuming we will continue as a going concern.

At December 31, 2021, we had cash and cash equivalents of approximately $6.0 million, which we believe, together with the net cash proceeds of approximately $5.0 million received from the February 2022 Offering, is sufficient to fund our planned operations to the end of the third quarter of 2022. We will require additional funds to finance our operations. We are exploring several financing alternatives; however, there can be no assurance that our efforts to obtain the funding required to continue our operations will be successful. There is substantial doubt about our ability to continue as a going concern.

Discontinued Operations

In October 2020, we announced our decision to discontinue selling Probuphine in the U.S. and wind down our commercialization activities, and to pursue a plan that will enable us to focus on our current, early-stage ProNeura-based product development programs.

The accompanying financial statements have been recast for all periods presented to reflect the assets, liabilities, revenue and expenses related to our U.S. commercialization activities as discontinued operations (see Note 11). The accompanying financial statements are generally presented in conformity with our historical format. We believe this format provides comparability with the previously filed financial statements.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the U.S. requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Going concern assessment

We assess going concern uncertainty in our financial statements to determine if we have sufficient cash on hand and working capital, including available borrowings on loans, to operate for a period of at least one year from the date the financial statements are issued or available to be issued, which is referred to as the "look-forward period" as defined by Accounting Standard Update ASU No. 2014-15. As part of this assessment, based on conditions that are known and reasonably knowable to us, we will consider various scenarios, forecasts, projections, estimates and will make certain key assumptions, including the timing and nature of projected cash expenditures or programs, and its ability to delay or curtail expenditures or programs, if necessary, among other factors. Based on this assessment, as necessary or applicable, we make certain assumptions around implementing curtailments or delays in the nature and timing of programs and expenditures to the extent we deem probable those implementations can be achieved and we have the proper authority to execute them within the look-forward period in accordance with ASU No. 2014-15.

Based upon the above assessment, we concluded that, at the date of filing the financial statements in this Annual Report on Form 10-K for the year ended December 31, 2021, we did not have sufficient cash to fund our operations for the next 12 months without additional funds and, therefore, there was substantial doubt about our ability to continue as a going concern within 12 months after the date the financial statements were issued. Additionally, we have suffered recurring losses from operations and have an accumulated deficit that raises substantial doubt about our ability to continue as a going concern.

Inventories

Inventories are recorded at the lower of cost or net realizable value. Cost is based on the first in, first out method. We regularly review inventory quantities on hand and write down to its net realizable value any inventory that we believe to be impaired. The determination of net realizable value requires judgment including consideration of many factors, such as estimates of future product demand, product net selling prices, current and future market conditions and potential product obsolescence, among others. The components of inventories are as follows:

	As of December 31,	
	2021	2020
Raw materials and supplies	$ 227	$ 170
Finished goods	66	158
	$ 293	$ 328

The approximately $66,000 and $158,000 of finished goods inventory at December 31, 2021 and 2020, respectively, included materials held for potential sale.

Stock-Based Compensation

We recognize compensation expense using a fair-value based method, for all stock-based payments including stock options and restricted stock awards and stock issued under an employee stock purchase plan. These standards require companies to estimate the fair value of stock-based payment awards on the date of grant using an option pricing model. See Note 9 "Stock Plans," for a discussion of our stock-based compensation plans.

Warrants Issued in Connection with Equity Financing

We generally account for warrants issued in connection with equity financings as a component of equity, unless there is a deemed possibility that we may have to settle the warrants in cash. For warrants issued with deemed possibility of cash settlement, we record the fair value of the issued warrants as a liability at each reporting period and record changes in the estimated fair value as a non-cash gain or loss in the Statements of Operations and Comprehensive Loss.

Cash and Cash Equivalents

Our investment policy emphasizes liquidity and preservation of principal over other portfolio considerations. We select investments that maximize interest income to the extent possible given these two constraints. We satisfy liquidity requirements by investing excess cash in securities with different maturities to match projected cash needs and limit concentration of credit risk by diversifying our investments among a variety of high credit-quality issuers and limit the amount of credit exposure to any one issuer.

The estimated fair values have been determined using available market information. We do not use derivative financial instruments in our investment portfolio.

All investments with original maturities of three months or less are considered to be cash equivalents. We had money market funds of approximately $5.7 million and $5.1 million as of December 31, 2021 and 2020, respectively, included in our cash and cash equivalents.

Property and Equipment

Property and equipment are recorded at cost and depreciated using the straight-line method over the estimated useful lives of the assets ranging from three to five years. Leasehold improvements are amortized over the shorter of the lease term or the estimated useful life of the assets.

Revenue Recognition

We generate revenue principally from collaborative research and development arrangements, sales or licenses of technology, government grants, sales of Probuphine materials to Molteni and Knight, and prior to the discontinued operations, the sale of Probuphine in the U.S. Consideration received for revenue arrangements with multiple components is allocated among the separate performance obligations based upon their relative estimated standalone selling price.

In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our agreements, we perform the following steps for our revenue recognition: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) we satisfy each performance obligation.

Grant Revenue

We have contracts with National Institute on Drug Abuse or NIDA, within the U.S. Department of Health and Human Services, or HHS, the Bill & Melinda Gates Foundation, and other government-sponsored organizations for research and development related activities that provide for payments for reimbursed costs, which may include overhead and general and administrative costs. We recognize revenue from these contracts as we perform services under these arrangements when the funding is committed. Associated expenses are recognized when incurred as research and development expense. Revenues and related expenses are presented gross in the statements of operations and comprehensive loss.

Net Product Revenue

Prior to the discontinuation of our commercialization activities relating to Probuphine in the U.S., we recognized revenue from product sales when control of the product transfers, generally upon shipment or delivery, to our customers, which include distributors. As customary in the pharmaceutical industry, our gross product revenue was subject to a variety of deductions in the forms of variable consideration, such as rebates, chargebacks, returns and discounts, in arriving at reported net product revenue. This variable consideration was estimated using the most-likely amount method, which is the single most-likely outcome under a contract and was typically at stated contractual rates. The actual outcome of this variable consideration could materially differ from our estimates. From time to time, we would adjust our estimates of this variable consideration when trends or significant events indicated that a change in estimate is appropriate to reflect the actual experience. Additionally, we continued to assess the estimates of our variable consideration as we continued to accumulate additional historical data.

Returns – Consistent with the provisions of ASC 606, we estimated returns at the inception of each transaction, based on multiple considerations, including historical sales, historical experience of actual customer returns, levels of inventory in our distribution channel, expiration dates of purchased products and significant market changes which could impact future expected returns to the extent that we would not reverse any receivables, revenues, or contract assets already recognized under the agreement. During the year ended December 31, 2019, we entered into agreements with large national specialty pharmacies with a distribution channel different from that of our existing customers and, therefore, the related reserves had unique considerations. We continued to evaluate the activities with these specialty pharmacies and updated the related reserves accordingly.

Rebates – Our provision for rebates was estimated based on our customers' contracted rebate programs and our historical experience of rebates paid.

Discounts –The provision was estimated based upon invoice billings, utilizing historical customer payment experience.

Performance Obligations

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. Our performance obligations include commercialization license rights, development services and services associated with the regulatory approval process.

We have optional additional items in contracts, which are accounted for as separate contracts when the customer elects such options. Arrangements that include a promise for future commercial product supply and optional research and development services at the customer's discretion are generally considered as options. We assess if these options provide a material right to the customer and, if so, such material rights are accounted for as separate performance obligations. If we are entitled to additional payments when the customer exercises these options, any additional payments are recorded in revenue when the customer obtains control of the goods or services.

Transaction Price

We have both fixed and variable consideration. Non-refundable upfront payments are considered fixed, while milestone payments are identified as variable consideration when determining the transaction price. Funding of research and development activities is considered variable until such costs are reimbursed at which point, they are considered fixed. We allocate the total transaction price to each performance obligation based on the relative estimated standalone selling prices of the promised goods or services for each performance obligation.

At the inception of each arrangement that includes milestone payments, we evaluate whether the milestones are considered probable of being achieved and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone is included in the transaction price. Milestone payments that are not within our control, such as approvals from regulators, are not considered probable of being achieved until those approvals are received.

For arrangements that include sales-based royalties or earn-out payments, including milestone payments based on the level of sales, and the license or purchase agreement is deemed to be the predominant item to which the royalties or earn-out payments relate, we recognize revenue at the later of (a) when the related sales occur, or (b) when the performance obligation to which some or all of the royalty or earn-out payment has been allocated has been satisfied (or partially satisfied).

Allocation of Consideration

As part of the accounting for these arrangements, we must develop assumptions that require judgment to determine the stand-alone selling price of each performance obligation identified in the contract. Estimated selling prices for license rights are calculated using the residual approach. For all other performance obligations, we use a cost-plus margin approach.

Timing of Recognition

Significant management judgment is required to determine the level of effort required under an arrangement and the period over which we expect to complete our performance obligations under an arrangement. We estimate the performance period or measure of progress at the inception of the arrangement and re-evaluate it each reporting period. This re-evaluation may shorten or lengthen the period over which revenue is recognized. Changes to these estimates are recorded on a cumulative catch-up basis. If we cannot reasonably estimate when our performance obligations either are completed or become inconsequential, then revenue recognition is deferred until we can reasonably make such estimates. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method. Revenue is recognized for licenses or sales of functional intellectual property at the point in time the customer can use and benefit from the license. For performance obligations that are services, revenue is recognized over time proportionate to the costs that we have incurred to perform the services using the cost-to-cost input method.

Contract Assets and liabilities

The following table presents the activity related to our accounts receivable for the year ended December 31, 2021.

(In thousands)	December 31, 2021
Balance at January 1, 2021	$ 884
Additions	1,526
Deductions	(2,298)
Balance at December 31, 2021	$ 112

Research and Development Costs and Related Accrual

Research and development expenses include internal and external costs. Internal costs include salaries and employment related expenses, facility costs, administrative expenses and allocations of corporate costs. External expenses consist of costs associated with outsourced contract research organization ("CRO") activities, sponsored research studies, product registration, and investigator sponsored trials. We also record accruals for estimated ongoing clinical trial costs. Clinical trial costs represent costs incurred by CROs and clinical sites. These costs are recorded as a component of research and development expenses. Under our agreements, progress payments are typically made to investigators, clinical sites and CROs. We analyze the progress of the clinical trials, including levels of patient enrollment, invoices received and contracted costs when evaluating the adequacy of accrued liabilities. Significant judgments and estimates must be made and used in determining the accrued balance in any accounting period. Actual results could differ from those estimates under different assumptions. Revisions are charged to expense in the period in which the facts that give rise to the revision become known.

Net Loss Per Share

Basic net loss per share excludes the effect of dilution and is computed by dividing net loss by the weighted-average number of shares outstanding for the period. Diluted net loss per share reflects the potential dilution that could occur if securities or other contracts to issue shares were exercised into shares. In calculating diluted net loss per share, the numerator is adjusted for the change in the fair value of the warrant liability (only if dilutive) and the denominator is increased to include the number of potentially dilutive common shares assumed to be outstanding during the period using the treasury stock method. Basic and diluted net loss per share was the same for each of the periods presented.

The table below presents common shares underlying stock options and warrants that are excluded from the calculation of the weighted average number of shares of common stock outstanding used for the calculation of diluted net loss per common share. These are excluded from the calculation due to their anti-dilutive effect for the years ended (in thousands):

	December 31,	
	2021	2020
Weighted-average anti-dilutive common shares resulting from stock awards	617	31
Weighted-average anti-dilutive common shares resulting from warrants	2,374	297
Restricted stock	17	—
	3,008	328

Leases

We determine whether the arrangement is or contains a lease at inception. Operating lease right-of-use assets and lease liabilities are recognized at the present value of the future lease payments at commencement date. The interest rate implicit in lease contracts is typically not readily determinable, and therefore, we utilize our incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. Certain adjustments to the right-of-use asset may be required for items such as initial direct costs paid or incentives received.

Lease expense is recognized over the expected term on a straight-line basis. Operating leases are recognized on our balance sheet as right-of-use assets, operating lease liabilities current and operating lease liabilities non-current.

The following table presents the minimum lease payments of our operating lease as of December 31, 2021 (in thousands):

2022	127
2023	130
2024	66
Total minimum lease payments (base rent)	323
Less: imputed interest	(24)
Total operating lease liabilities	$ 299

Subsequent Events

We have evaluated events that have occurred subsequent to December 31, 2021 and through the date that the financial statements are issued. See Note 12 Subsequent Events.

Fair Value Measurements

We measure the fair value of financial assets and liabilities based on authoritative guidance which defines fair value, establishes a framework consisting of three levels for measuring fair value, and requires disclosures about fair value measurements. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. There are three levels of inputs that may be used to measure fair value:

Level 1 – quoted prices in active markets for identical assets or liabilities;
Level 2 – quoted prices for similar assets and liabilities in active markets or inputs that are observable;
Level 3 – inputs that are unobservable (for example cash flow modeling inputs based on assumptions).

Financial instruments, including receivables, accounts payable and accrued liabilities are carried at cost, which we believe approximates fair value due to the short-term nature of these instruments. The approximately $5.7 million and $5.1 million fair values of money market funds as of December 31, 2021 and 2020 included in our cash and cash equivalents are classified as Level 1 and were derived from quoted market prices as active markets for these instruments exists. Our warrant and derivative liabilities are classified within level 3 of the fair value hierarchy because the value is calculated using significant judgment based on our own assumptions in the valuation of these liabilities.

Recent Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In December 2019, the FASB issued ASU 2019-12, *Income Taxes - Simplifying the Accounting for Income Taxes* ("Topic 740"): which simplifies the accounting for income taxes, eliminates certain exceptions to the general principles in Topic 740 and clarifies and amends existing guidance to improve consistent application. The new guidance, effective January 1, 2021, did not have an impact on our financial statements.

Accounting Standards Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses*, which requires an organization to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. Financial institutions and other organizations will now use forward-looking information to better inform their credit loss estimates. The amendments in this ASU are effective beginning on January 1, 2023. We are currently assessing the impact of the adoption of Topic 326 on our financial statements and disclosures.

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform*, which provides companies with optional guidance, including expedients and exceptions for applying GAAP to contracts and other transactions affected by reference rate reform, such as the London Interbank Offered Rate, or LIBOR. This new standard was effective upon issuance and generally can be applied to applicable contract modifications through December 31, 2022. We are evaluating the effects that the adoption of this guidance will have on our financial statements and disclosures.

In August 2020, the FASB issued ASU No. 2020-06, *Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies the accounting for convertible instruments. ASU 2020-06 eliminates certain models that require separate accounting for embedded conversion features, in certain cases. Additionally, among other changes, the guidance eliminates certain of the conditions for equity classification for contracts in an entity's own equity. The guidance also requires entities to use the if converted method for all convertible instruments in the diluted earnings per share calculation and include the effect of share settlement for instruments that may be settled in cash or shares, except for certain liability-classified share-based payment awards. This guidance is effective beginning after December 15, 2023 and must be applied using either a modified or full retrospective approach. Early adoption is permitted. We are currently evaluating the impact this guidance will have on our financial statements and related disclosures.

2. Property and Equipment

Property and equipment consisted of the following (in thousands):

	As of December 31,	
	2021	2020
Furniture and office equipment	$ 132	$ 388
Leasehold improvements	—	408
Laboratory equipment	1,108	1,108
Computer equipment	577	1,262
	1,817	3,166
Less accumulated depreciation and amortization	(1,397)	(2,548)
Property and equipment, net	$ 420	$ 618

3. Molteni Purchase Agreement

On March 21, 2018, we entered into a purchase agreement, or Molteni Purchase Agreement, with L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A., or Molteni, pursuant to which Molteni acquired the European intellectual property related to Probuphine and gained the exclusive right to commercialize the Probuphine product supplied by us, to be marketed under the tradename Sixmo, in the EU, as well as certain countries of the Commonwealth of Independent States, the Middle East and North Africa.

Following certain amendments to the Molteni Purchase Agreement in August 2018 and September 2019, in October 2020, we entered into a Debt Settlement and Release Agreement, or DSRA, with Molteni and Horizon Technology Finance Corporation, or Horizon, the holders of our outstanding secured debt, to settle such obligations for $1.6 million in cash, the transfer of certain Probuphine assets to Molteni, including all of our manufacturing equipment located at DPT, and the termination of our rights to future payments under the Purchase Agreement with Molteni.

4. JT Pharmaceuticals Asset Purchase Agreement

In October 2020, we entered into an Asset Purchase Agreement, or JT Agreement, with JT Pharmaceuticals, Inc., or JT Pharma, to acquire JT Pharma's kappa opioid agonist peptide, TP-2021 (formerly JT-09) for use in combination with our ProNeura long-term, continuous drug delivery technology, for the treatment of chronic pruritus and other medical conditions. Under the terms of the JT Agreement, JT Pharma received a $15,000 closing payment and is entitled to receive future milestone payments, payable in cash or in stock, based on the achievement of certain developmental and regulatory milestones, and single-digit percentage earn-out payments on net sales of the product if successfully developed and approved for commercialization. As of December 31, 2021, none of these events occurred and no contingent consideration, milestone or earn-out payments have been recognized.

5. Commitments and Contingencies

Lease Commitments

We lease our office facility under operating lease that expires in June 2024. Rent expense associated with this lease was approximately $0.2 million and $0.3 million for years ended December 31, 2021 and 2020, respectively.

Minimum payments

Our manufacturing agreement, as amended, with DPT, our contract manufacture, which ended in October 2020, provided for a minimum manufacturing fee of $1.0 million. In the event we did not have DPT manufacture sufficient quantities of product to exceed the minimum manufacturing fee, DPT may invoice us for the amount of the shortfall.

Guarantees and Indemnifications

As permitted under Delaware law and in accordance with our Bylaws, we indemnify our officers and directors for certain events or occurrences while the officer or director is or was serving at our request in such capacity. The term of the indemnification period is for the officer's or director's lifetime. The maximum amount of potential future indemnification is unlimited; however, we have a director and officer insurance policy that limits our exposure and may enable us to recover a portion of any future amounts paid. We believe the fair value of these indemnification agreements is minimal. Accordingly, we have not recorded any liabilities for these agreements as of December 31, 2021.

In the normal course of business, we have commitments to make certain milestone payments to various clinical research organizations in connection with our clinical trial activities. Payments are contingent upon the achievement of specific milestones or events as defined in the agreements, and we have made appropriate accruals in our financial statements for those milestones that were achieved as of December 31, 2021. We also provide indemnifications of varying scope to our CROs and investigators against claims made by third parties arising from the use of our products and processes in clinical trials. Historically, costs related to these indemnification provisions were immaterial. We also maintain various liability insurance policies that limit our exposure. We are unable to estimate the maximum potential impact of these indemnification provisions on our future results of operations.

Legal Proceedings

A legal proceeding has been initiated by a former employee alleging wrongful termination, retaliation, infliction of emotional distress, negligent supervision, hiring and retention and slander. An independent investigation into this individual's allegations of whistleblower retaliation, while still an employee, was conducted utilizing an outside investigator and concluded that such allegations were not substantiated. We intend to vigorously defend the lawsuit (which we have compelled into arbitration); however, in light of our cash position, there can be no assurance that the defense and/or settlement of this matter will not have a material adverse impact on our business.

6. Warrant Liability

There were no warrant liabilities at December 31, 2021.

March 2020 Warrant Amendment

On March 3, 2020, we amended certain outstanding warrants to purchase an aggregate of 385,078 shares of common stock, including the January 2020 Warrants and warrants we issued in connection with a financing in August 2019 (the "August 2019 Warrants"), to modify certain provisions that had required them to be previously classified as liabilities and to enable them to now be classified as equity under the relevant accounting standards. As a result, we reclassified the fair value of the warrants on the date of the amendment from warrant liabilities to additional paid-in capital in the balance sheet and statement of stockholders' equity and recognized a non-cash loss on changes in the fair value of warrants in the statement of operations and comprehensive loss.

The following table provides a roll forward of the fair value of our warrant liabilities, the fair value of which was determined by Level 3 inputs for the year ended December 31, 2020 (in thousands):

Fair value, December 31, 2019	$	320
Issuance of the January 2020 Warrants		1,654
Change in fair value[(1)]		923
Reclassification of warrants to additional paid-in capital		(2,897)
Fair value, December 31, 2020	$	—

(1) Recognized as non-cash loss on changes in fair value of warrants in the statement of operations and comprehensive loss.

The warrant liability associated with the January 2020 Warrants was classified within Level 3 of the fair value hierarchy. The following table presents the weighted-average key assumptions used to calculate the fair value of the January 2020 Warrants:

	As of	
	March 3, 2020	January 7, 2020
Expected volatility	124 %	121 %
Risk-free interest rate	0.8 %	1.6 %
Dividend yield	—	—
Expected term (in years)	4.9	5.0
Weighted-average fair value per share warrant	$ 7.80	$ 5.70

The warrant liability associated with the August 2019 Warrants was classified within Level 3 of the fair value hierarchy. The following table presents the weighted-average key assumptions used to calculate the fair value of the August 2019 Warrants:

	As of	
	March 3, 2020	December 31, 2019
Expected volatility	124 %	125 %
Risk-free interest rate	0.8 %	1.7 %
Dividend yield	—	—
Expected term (in years)	4.5	4.6
Weighted-average fair value per share warrant	$ 6.30	$ 3.30

7. Debt Agreements

Horizon and Molteni Loans

In March 2018, we entered into an Amended and Restated Venture Loan and Security Agreement, or Loan Agreement, with Horizon and Molteni pursuant to which Horizon assigned approximately $2.4 million of the $4.0 million outstanding principal balance of its loan to us to Molteni and Molteni was appointed as the collateral agent and assumed majority and administrative control of the loan. Under the Loan Agreement, Molteni had the right to convert its portion of the debt into shares of our common stock at a conversion price of $216.00 per share and was required to effect this conversion of debt to equity upon completion of an equity financing meeting specified criteria. In connection with the Loan Agreement, we issued warrants to purchase an aggregate of 223 shares of our common stock with an exercise price per share of $216.00 to Horizon.

In September 2019, we entered into an amendment to the Loan Agreement pursuant to which the interest-only payment and forbearance periods were extended by one year to December 31, 2020 and the maturity date was extended by one year to June 1, 2022. In connection with the amendment to the Loan Agreement, the final payments to the lenders were increased by an aggregate of approximately $0.3 million (exclusive of a restructuring fee payable to Horizon) and the conversion provisions related to Molteni's portion of the loan amount were revised to eliminate the mandatory conversion feature, to reduce the conversion price to $6.75 and to cap the number of shares issuable upon conversion to 114,093.

In October 2020, we entered into the DSRA with Molteni and Horizon to settle our obligations for $1.6 million in cash, the transfer of certain Probuphine assets to Molteni, including all of our manufacturing equipment located at DPT, and the termination of our rights to future payments under the Purchase Agreement with Molteni. The DSRA Agreement, provided for the release to us of the remaining collateral. As a result, during the year ended December 31, 2020, we recorded an approximately $0.1 million loss on debt extinguishment.

Paycheck Protection Program Loan

On April 20, 2020, we received an approximately $654,000 loan, or PPP Loan, pursuant to the Paycheck Protection Program of the CARES Act that bore interest at the annual rate of 1.0% and matured in April 2022. The proceeds of the PPP Loan were to be used to retain workers and maintain payroll and make mortgage interest, lease and utility payments and were subject to forgiveness in accordance with requirements of the Small Business Administration. The PPP Loan originally had a six-month deferral of payments period which was extended to sixteen months during the third quarter of 2020. In May 2021, the entire balance of the PPP loan along with accrued interest was forgiven and the approximately $0.7 million gain on extinguishment of the debt was included in other income (expense) in our statements of operations and comprehensive loss.

8. Stockholders' Equity

Common Stock

Our common stock outstanding as of December 31, 2021 and December 31, 2020 was 9,914,158 shares and 7,139,068 shares, respectively.

Restricted Shares

In August 2021, we agreed to issue 50,000 shares of our common stock pursuant to a restricted stock agreement with Maxim Partners, LLC in connection with the entry into an amendment to our existing advisory agreement. The shares vest monthly over 12 months. We recorded approximately $36,000 of stock-based compensation expense during the year ended December 31, 2021.

The following table summarizes restricted stock activity:

	December 31, 2021
Outstanding at December 31, 2020	—
Issued	50,000
Forfeited or expired	—
Outstanding at December 31, 2021	50,000

Annual Meeting of Stockholders

In January 2021, our stockholders approved an amendment to the 2015 Omnibus Equity Incentive plan to increase the number of authorized shares to 1,000,000 shares.

January 2021 Offering

In January 2021, we completed an offering with several accredited institutional investors pursuant to which we issued 2,725,000 shares of our common stock in a registered direct offering and warrants to purchase 2,725,000 shares of our common stock with an exercise price of $3.55 per share in a concurrent private placement. The warrants were classified as equity, were exercisable immediately and will expire in July 2026. The net cash proceeds from this offering were approximately $8.8 million after deduction of underwriting fees and other offering expenses.

October 2020 Public Offering

In October 2020, we completed the 2020 Public Offering pursuant to which we sold 2,666,667 units at a price of $3.00 per unit, with each unit consisting of (i) one share of common stock and (ii) one warrant (the "October 2020 Warrants") to purchase one share of common stock, resulting in gross proceeds of approximately $8.0 million. The net proceeds of the 2020 Public Offering, after deduction of underwriting discounts and commissions and other offering expenses and the $1.6 million payment pursuant to the DSRA Agreement, were approximately $5.7 million. The October 2020 Warrants were classified as equity, have an exercise price of $3.00, and were exercisable on December 1, 2020 following the reverse split of our common stock and will expire on the fifth anniversary of the initial exercise date.

September 2020 Offering

In September 2020, we completed a registered direct offering with several institutional investors pursuant to which we issued 648,000 shares of our common stock at a price of $4.20 per share. We received net cash proceeds of approximately $2.4 million, after deduction of underwriting fees and other offering expenses.

January 2020 Offering

In January 2020, we completed a financing with several institutional investors pursuant to which we issued 290,000 shares of our common stock in a registered direct offering and warrants to purchase 290,000 shares of our common stock with an exercise price of

$7.50 per share in a concurrent private placement (the "January 2020 Warrants") pursuant to which we received net cash proceeds of approximately $1.9 million, after deduction of underwriting fees and other offering expenses. The January 2020 Warrants became exercisable in September 2020 following receipt of stockholder approval of an increase in our authorized shares of common stock and they expire in July 2025. Financing costs of approximately $0.2 million allocated to the January 2020 warrant liability were expensed and included in other income (expense) in the statements of operations and comprehensive loss.

August 2019 Offering

In August 2019, we completed an offering with a single accredited institutional investor pursuant to which we issued 49,334 shares of our common stock and pre-funded warrants to purchase 45,744 shares of our common stock with an exercise price of $0.30 per share in a registered direct offering and the Placement Warrants to purchase 95,078 shares of our common stock with an exercise price of $32.10 per share in a concurrent private placement. The pre-funded warrants, which were exercised for common stock in September 2019, were issued in lieu of common stock in order to ensure the investor did not exceed certain beneficial ownership limitations. The Placement Warrants became exercisable in February 2020 and will expire in February 2025. At the time of issuance, the Placement Warrants contained a provision where the warrant holder has the option to receive cash, equal to the Black Scholes fair value of the remaining unexercised portion of the warrant, as cash settlement in the event that there is a fundamental transaction (contractually defined to include various merger, acquisition or stock transfer activities). The Placement Warrants were classified as a liability in the balance sheet at December 31, 2019. In March 2020, we amended the warrants to modify the provisions that had required them to be previously classified as liabilities and enabled them to be classified as equity under the relevant accounting standards (see Note 6).

Common Stock Warrants

During the year ended December 31, 2020, we received an aggregate of approximately $7.2 million in cash proceeds from the exercises of warrants to purchase 1,112,313 shares of our common stock.

During the year ended December 31, 2020, we issued 450,761 shares of our common stock upon the cashless exercise of 1,022,408 warrants.

As of December 31, 2021, the following warrants to purchase shares of our common stock were outstanding (in thousands, except per share price):

Date Issued	Expiration Date	Exercise Price	Outstanding
07/27/2017	07/27/2024	$ 45.00	12
03/21/2018	03/21/2025	$ 216.00	1
03/21/2018	03/21/2025	$ 216.00	3
09/25/2018	09/25/2023	$ 18.00	154
09/25/2018	09/25/2023	$ 50.40	8
08/09/2019	02/09/2025	$ 32.10	95
10/18/2019	10/18/2024	$ 3.00	230
01/09/2020	07/09/2025	$ 7.50	290
10/30/2020	12/01/2025	$ 3.00	1,644
01/20/2021	07/26/2026	$ 3.55	2,725
			5,162

Shares Reserved for Future Issuance

As of December 31, 2021, shares of common stock reserved by us for future issuance consisted of the following (in thousands):

Stock options outstanding	682
Shares issuable upon the exercise of warrants	5,162
	5,844

9. Stock Plans

In August 2015, our stockholders approved the 2015 Omnibus Equity Incentive Plan (the "2015 Plan"). The 2015 Plan, as subsequently amended, authorized a total of 1,000,000 shares of our common stock for issuance to employees, directors, officers, consultants and advisors. As of December 31, 2021, options to purchase 320,936 shares of our common stock were available for grant and 679,064 shares of our common stock outstanding under the 2015 Plan.

In February 2014, our Board adopted the 2014 Incentive Plan (the "2014 Plan"), pursuant to which 2,526 shares of our common stock were authorized for issuance to employees, directors, officers, consultants and advisors. The 2014 Plan was terminated upon the approval of the 2015 Plan. As of December 31, 2021, options to purchase 1,272 shares of our common stock were outstanding under the 2014 Plan.

In July 2002, we adopted the 2002 Stock Incentive Plan (the "2002 Plan"). The 2002 Plan, as amended in 2005, authorized a total of approximately 7,234 shares of our common stock for issuance to employees, officers, directors, consultants, and advisers. The exercise prices of options granted under the 2002 Plan were 100% of the fair market value of our common stock on the date of grant. The 2002 Plan expired by its terms in July 2012. As of December 31, 2021, options to purchase an aggregate of 1,324 shares of our common stock were outstanding under the 2002 Plan.

The following table summarizes option activity for the year ended December 31, 2021:

	Shares (in thousands)	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in thousands)
Outstanding at January 1, 2021	28	$ 242.70	6.35	$ —
Granted	670	4.02		
Cancelled/expired	(16)	56.83		
Outstanding at December 31, 2021	682	$ 12.53	8.98	$ —
Exercisable at December 31, 2021	456	$ 16.74	8.92	$ —

We use the Black-Scholes-Merton option-pricing model with the following assumptions to estimate the stock-based compensation expense:

	Years Ended December 31,	
	2021	2020
Weighted-average risk-free interest rate	0.5 %	0.4 %
Expected dividend payments	—	—
Expected holding period (years)(1)	5.45	5.79
Weighted-average volatility factor(2)	1.14	1.04
Estimated forfeiture rates for options granted	30 %	27 %

(1) Expected holding period is based on historical experience of similar awards, giving consideration to the contractual terms of the stock-based awards, vesting schedules and the expectations of future employee behavior.

(2) Weighted average volatility is based on the historical volatility of our common stock.

(3) Estimated forfeiture rates are based on historical data.

Based upon the above methodology, the weighted-average fair value of options and awards granted during the years ended December 31, 2021 and 2020 was $3.29 and $6.30, respectively.

The following table summarizes the stock-based compensation expense (in thousands):

	Years Ended December 31,	
	2021	2020
Research and development	$ 749	$ —
General and administrative	756	7
Total stock-based compensation expenses	$ 1,505	$ 7

As of December 31, 2021, there was approximately $0.5 million of total unrecognized compensation expense related to non-vested stock options. This expense is expected to be recognized over a weighted-average period of 1.1 years.

10. Income Taxes

As of December 31, 2021, we had federal net operating loss carryforwards of approximately $209.0 million that expire at various dates through 2037 and approximately $49.8 million which do not expire but are subject to 80% taxable income limitations. As of December 31, 2021, we had federal research and development tax credits of approximately $7.5 million that expire at various dates through 2041. We also had net operating loss carryforwards for California income tax purposes of approximately $110.6 million that expire at various dates through 2041 and state research and development tax credits of approximately $9.2 million which do not expire.

Current federal and California tax laws include substantial restrictions on the utilization of net operating losses and tax credits in the event of an ownership change of a corporation under Internal Revenue Code Section 382 and 383.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes and operating loss and credit carryforwards. Significant components of our deferred tax assets are as follows (in thousands):

	As of December 31,	
	2021	2020
Deferred tax assets:		
Net operating loss carryforwards	$ 62,097	$ 64,120
Research credit carryforwards	14,738	15,228
Other, net	1,113	1,005
Total deferred tax assets	77,948	80,353
Deferred tax liabilities:		
Other, net	(65)	(31)
Total deferred tax liabilities	(65)	(31)
Valuation allowance	(77,883)	(80,322)
Net deferred tax assets	$ —	$ —

ASC 740 requires that the tax benefit of net operating losses, temporary differences and credit carryforwards be recorded as an asset to the extent that management assesses that realization is “more likely than not.” Realization of the future tax benefits is dependent on our ability to generate sufficient taxable income within the carryforward period. Because of our recent history of operating losses, our management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not likely to be realized and, accordingly, has provided a valuation allowance.

Realization of deferred tax assets is dependent upon future earnings, if any, the timing and amount of which are uncertain. Accordingly, the net deferred tax assets have been fully offset by a valuation allowance. The valuation allowance decreased by approximately $2.4 million during 2021 and decreased by approximately $0.5 million during 2020.

The provision for income taxes consists of state minimum taxes due. The effective tax rate of our provision (benefit) for income taxes differs from the federal statutory rate as follows (in thousands):

	Years Ended December 31,	
	2021	2020
Computed at 21%	$ (1,842)	$ (3,830)
State taxes	(67)	(220)
Change in valuation allowance	(1,939)	(491)
Other	3	26
Revaluation of warrant liability	—	194
Research and development credits	(9)	(65)
Tax attributes expirations	3,767	4,352
Impact of IRC 162m	87	34
Total	$ —	$ —

We had no unrecognized tax benefits or any amounts accrued for interest and penalties for the three years ended December 31, 2021. Our policy is to recognize interest and penalties related to income taxes as a component of income tax expense. We do not expect the amount of unrecognized tax benefits will materially change in the next twelve months.

We file tax returns in the U.S. federal jurisdiction and various state jurisdictions. We are subject to the U.S. federal and state income tax examination by tax authorities for such years 2002 through 2021, due to net operating losses that are being carried forward for tax purposes.

11.Discontinued Operations

The components of loss from discontinued operations as reported in our statements of operations were as follows:

(In thousands, except per share data)	Year ended December 31, 2020
Revenue:	
Product revenue	$ 376
Costs and expenses:	
Cost of goods sold	1,332
Research and development	1,917
Selling, general and administrative	7,224
Total costs and expenses	10,473
Loss from discontinued operations	(10,097)
Other expense, net	738
Net loss from discontinued operations	$ 10,835
Basic and diluted net loss per common share from discontinued operations	$ (2.87)
Weighted average shares used in computing basic and diluted net loss per common share	3,773

The following table presents information related to assets and liabilities reported as discontinued operations in our balance sheet:

	December 31,	
	2021	2020
	(In thousands)	
Prepaid expenses and other current assets	12	181
Discontinued operations – current assets	$ 12	$ 181
Accounts payable	$ 782	$ 1,515
Accrued clinical trials expenses	—	80
Accrued sales allowances	—	61
Other accrued liabilities	362	304
Discontinued operations – current liabilities	$ 1,144	$ 1,960

During the year ended December 31, 2020 we recognized non-cash stock-based compensation expenses of approximately $0.1 million which is included in discontinued operations.

12. Subsequent Events

JT Pharma Milestone

In January 2022, we entered into an agreement with JT Pharma to clarify certain provisions of the JT Agreement pursuant to which we agreed that the proof-of-concept milestone provided for in the JT Agreement was achieved and made a payment of $100,000 and issued 51,021 shares of our common stock to JT Pharma.

February 2022 Offerings

In February 2022, we completed a registered direct offering with an accredited investor pursuant to which we issued an aggregate of 1,100,000 shares of our common stock and 2,274,242 pre-funded warrants to purchase shares of our common stock, with an exercise price of $0.001 per share. In a concurrent private placement, we sold unregistered pre-funded warrants to purchase an aggregate of 1,289,796 shares of common stock with an exercise price of $0.001 per share and issued unregistered five year and six month warrants to purchase an aggregate of 4,664,038 shares of common stock with an exercise price of $1.14. The net cash proceeds from these offerings were approximately $5.0 million after deduction of underwriting fees and other offering expenses.

Global Events

In February 2022, the Russian Federation and Belarus commenced a military action with the country of Ukraine. As a result of this action, various nations, including the United States, have instituted economic sanctions against the Russian Federation and Belarus. Further, the impact of this action and related sanctions on the world economy are not determinable as of the date of these financial statements. The specific impact on our financial condition, results of operations, and cash flows is also not determinable as of the date of these financial statements.

Warrant Exercises

In March 2022, we received approximately $1,000 from the exercise of 974,242 pre-funded warrants issued in the February 2022 registered direct offering.

(b) Exhibits

No.	Description
3.1.1	Amended and Restated Certificate of Incorporation of the Registrant, as amended[2]
3.1.2	Certificate of Amendment to the Restated Certificate of Incorporation dated September 24, 2015[4]
3.1.3	Certificate of Amendment to the Restated Certificate of Incorporation dated January 23, 2019[10]
3.1.4	Certificate of Amendment to the Restated Certificate of Incorporation dated November 30, 2020[20]
3.2	By-laws of the Registrant[1]
3.3	Amendment to the By-laws of the Registrant dated December 29, 2021[23]
4.1	Form of Lender Warrant[6]
4.2	Form of Rights Agreement Warrant[7]
4.3	Warrant Agency Agreement between Titan Pharmaceuticals, Inc. and Continental Stock Transfer & Trust Company and Form of Offering Warrant[9]
4.4	Representative's Purchase Warrant[9]
4.5	Form of August 2019 Private Placement Warrant[11]
4.6	Class B Warrant Agency Agreement dated October 16, 2019 between Titan Pharmaceuticals, Inc. and Maxim Group LLC Form of January 2020 Private Placement Warrant[12]
4.7	Form of January 2020 Private Placement Warrant[13]
4.8	Form of March 3, 2020 Warrant Amendment Agreement[16]
4.9	Description of the Registrant's Common Stock[15]
4.10	Warrant Agency Agreement between Titan Pharmaceuticals, Inc. and Continental Stock Transfer & Trust Company and Form of Warrant[18]
4.11	Form of January 2021 Private Placement Warrant[21]
4.12	Form of February 2022 Registered Pre-Funded Warrant[24]
4.13	Form of February 2022 Private Pre-Funded Warrant[24]
4.14	Form of February 2022 Placement Warrant[24]
10.1	Titan Pharmaceuticals, Inc. Third Amended and Restated 2015 Omnibus Equity Incentive Plan[10]
10.2	Employment Agreement between the Registrant and Marc Rubin[5]
10.3 ±	Distribution and Sublicense Agreement dated February 1, 2016 as amended by agreement dated August 2, 2018 between Titan Pharmaceuticals, Inc. and Knight Therapeutics Inc.[8]
10.4	Amendment to lease for Registrant's facility dated March 21, 2016[8]
10.5	Employment Agreement between the Registrant and Katherine Beebe DeVarney[14]
10.6	Debt Settlement and Release Agreement by and between Titan Pharmaceuticals, Inc., Horizon Technology Finance Corporation and L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A.[17]
10.7±±	Asset Purchase Agreement dated October 27, 2020 between Titan Pharmaceuticals, Inc. and JT Pharmaceuticals, Inc.[19]
10.8	Placement Agency Agreement dated January 15, 2021, by and between Titan Pharmaceuticals, Inc. and Maxim Group LLC[21]
10.9	Amendment to Employment Agreement between the Registrant and Marc Rubin[22]
10.10	Form of February 2022 Securities Purchase Agreement[24]
10.11	Placement Agency Agreement dated February 2, 2022, by and between Titan Pharmaceuticals, Inc. and Maxim Group LLC[24]
14.1	Code of Business Conduct and Ethics[3]
23.1	Consent of WithumSmith+Brown, PC, Independent Registered Public Accounting Firm
23.2	Consent of OUM & Co., LLP, Independent Registered Public Accounting Firm
31.1	Certification of the Principal Executive and Financial Officer pursuant to Rule 13(a)-14(a) of the Securities Exchange Act of 1934
32.1	Certification of the Principal Executive and Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document

101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

± Confidential treatment has been granted as to certain portions of this exhibit.
±± Certain information has been omitted from this exhibit in reliance upon Item 601(b)(10) of Regulation S-K.
(1) Incorporated by reference from the Registrant's Registration Statement on Form S-3 (File No. 333-221126).
(2) Incorporated by reference from the Registrant's Registration Statement on Form 10 filed on January 14, 2010.
(3) Incorporated by reference from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2013.
(4) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on September 28, 2015.
(5) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on April 3, 2019.
(6) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on July 27, 2017.
(7) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on March 26, 2018.
(8) Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2018.
(9) Incorporated by reference from the Registrant's Current Report on Form 8-K dated September 25, 2018.
(10) Incorporated by reference from the Registrant's Current Report on Form 8-K dated January 25, 2019.
(11) Incorporated by reference from the Registrant's Current Report on Form 8-K dated August 8, 2019.
(12) Incorporated by reference from the Registrant's Current Report on Form 8-K dated October 18, 2019.
(13) Incorporated by reference from the Registrant's Current Report on Form 8-K dated January 7, 2020.
(14) Incorporated by reference from the Registrant's Annual Report on Form 10-K dated April 1, 2019.
(15) Incorporated by reference from the Registrant's Annual Report on Form 10-K dated March 30, 2020.
(16) Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2020.
(17) Incorporated by reference from the Registrant's Current Report on Form 8-K dated October 26, 2020.
(18) Incorporated by reference from the Registrant's Registration Statement on Form S-1/A dated October 27, 2020.
(19) Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q for the period ended September 30, 2020.
(20) Incorporated by reference from the Registrant's Current Report on Form 8-K dated December 1, 2020.
(21) Incorporated by reference from the Registrant's Current Report on Form 8-K dated January 19, 2021.
(22) Incorporated by reference from the Registrant's Current Report on Form 8-K dated October 28, 2021.
(23) Incorporated by reference from the Registrant's Current Report on Form 8-K dated December 29, 2021.
(24) Incorporated by reference from the Registrant's Current Report on Form 8-K dated February 3, 2022.

SIGNATURES

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

Date: March 25, 2022

TITAN PHARMACEUTICALS, INC.

By: /s/ Marc Rubin
Name: Marc Rubin, M.D.
Title: Executive Chairman
(Principal Executive and Principal Financial Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Marc Rubin, M.D. Marc Rubin, M.D.	Executive Chairman *(principal executive officer and principal financial officer)*	March 25, 2022
/s/ Katherine Beebe DeVarney, Ph.D. Katherine Beebe DeVarney, Ph.D.	President, Chief Operating Officer and Director	March 25, 2022
/s/ Joseph A. Akers Joseph A. Akers	Director	March 25, 2022
/s/ M. David MacFarlane, Ph.D. M. David MacFarlane, Ph.D.	Director	March 25, 2022
/s/ James R. McNab, Jr. James R. McNab, Jr.	Director	March 25, 2022
/s/ Brian E. Crowley Brian E. Crowley	Vice President, Finance *(principal accounting officer)*	March 25, 2022

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-1 (File Nos. 333- 226841, 333-233722, 333-249550, 333-251187, 333-252482 and 333-262614), Form S-3 (File Nos. 333-230742 and 333-221126) and Form S-8 (File Nos. 333-171181 and 333-207950) of Titan Pharmaceuticals, Inc. of our report dated March 25, 2022, which includes an explanatory paragraph relating to the Company's ability to continue as a going concern, relating to the financial statements of Titan Pharmaceuticals, Inc., which appears in this Annual Report on Form 10-K.

/s/ WithumSmith+Brown, PC

San Francisco, California
March 25, 2022

Exhibit 23.2

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements on Form S-1 (File Nos. 333- 226841, 333-233722, 333-249550, 333-251187, 333-252482 and 333-262614), Form S-8 (File Nos. 333-171181 and 333-207950) and Form S-3 (File Nos. 333-230742 and 333-221126) of Titan Pharmaceuticals, Inc. of our report dated March 31, 2021 relating to the financial statements of Titan Pharmaceuticals, Inc. for the year ended December 31, 2020, which appears in this Annual Report on Form 10-K. Our report contains an explanatory paragraph expressing substantial doubt about the Company's ability to continue as a going concern.

/s/ OUM & CO. LLP

San Francisco, California
March 25, 2022

Exhibit 31.1

CERTIFICATION

I, Marc Rubin, M.D., certify that:

1. I have reviewed this Annual Report on Form 10-K of Titan Pharmaceuticals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under my supervision, to ensure that material information relating to the registrant, including its subsidiaries, is made known to me by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under my supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. I have disclosed, based on my most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 25, 2022

/s/ Marc Rubin
Name: Marc Rubin, M.D.
Title: Executive Chairman
(Principal Executive Officer and Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002

In connection with this Annual Report on Form 10-K of Titan Pharmaceuticals, Inc. (the "Company") for the year ended December 31, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

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

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

Date: March 25, 2022

/s/ Marc Rubin
Name: Marc Rubin, M.D.
Title: Executive Chairman
(Principal Executive Officer and Principal Financial Officer)