As filed with the Securities and Exchange Commission on September 12, 2018

Registration No. 333-226841

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

AMENDMENT NO. 2
TO
FORM S-1
REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

Titan Pharmaceuticals, Inc.

(Exact name of Registrant as specified in its charter)

Delaware	**2836**	**94-3171940**
(State or other jurisdiction of incorporation or organization)	*(Primary Standard Industrial Classification Code Number)*	*(I.R.S. Employer Identification Number)*

400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080
(650) 244-4990

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Sunil Bhonsle, Chief Executive Officer
Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080
(650) 244-4990

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Fran Stoller, Esq.
Loeb & Loeb LLP
345 Park Avenue
New York, New York 10154
Telephone: (212) 407-4000
Fax: (212) 407-4990

Ivan K. Blumenthal, Esq.
Anthony J. Marsico, Esq.
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
666 Third Avenue
New York, NY 10017
Telephone: (212) 935-3000
Fax: (212) 983 3115

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☒

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act of 1934.

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 7(a)(2)(B) of the Securities Act. ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price[1]	Amount of Registration Fee[2]
Class A Units consisting of:		
(i) Common Stock, par value $0.001 per share [2]	$ 2,587,500	$ 322.14
(ii) Warrants to purchase Common Stock [3]		
Class B Units consisting of:		
(i) Series A Convertible Preferred Stock, par value $0.001 per share	$14,662,500	$ 1,825.48
(ii) Warrants to purchase Common Stock [3]		
(iii) Common Stock issuable upon conversion of the Series A Convertible Preferred Stock[2]		
Common Stock issuable upon the exercise of the Warrants to purchase Common Stock [2]	$10,781,250	$ 1,342.27
Underwriter's Warrants to Purchase Common Stock [2]	$ 660,000	$ 82.17
Common Stock Underlying Underwriter's Warrants [3][4]		
Total	$28,691,250	$ 3,572.06[5]

(1) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(o) of the Securities Act of 1933, as amended. Includes shares and warrants to be sold upon exercise of the underwriters' option to purchase additional shares and warrants. See "Underwriting."

(2) Pursuant to Rule 416, the securities being registered hereunder include such indeterminate number of additional securities as may be issued after the date hereof as a result of stock splits, stock dividends or similar transactions.

(3) No fee pursuant to Rule 457(g) under the Securities Act of 1933, as amended.

(4) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(g) under the Securities Act. The underwriter's warrants are exercisable at a per share exercise price equal to 110% of the public offering price per share of common stock. The proposed maximum aggregate offering price of the underwriter's warrants is $660,000, which is equal to 110% of $600,000 (4% of $15,000,000).

(5) $3,572.06 was previously paid.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to Section 8(a), may determine.

PRELIMINARY PROSPECTUS **SUBJECT TO COMPLETION** **DATED SEPTEMBER 12, 2018**

3,358,209 Class A Units Consisting of Common Stock and Warrants and 12,750 Class B Units Consisting of Series A Convertible Preferred Stock and Warrants

We are offering 3,358,209 Class A Units consisting of one share of our common stock and one warrant to purchase 0.5 of a share of our common stock, at an exercise price equal to per whole share of common stock, which warrants will be exercisable upon issuance and will expire five years from date of issuance. The shares of common stock and warrants that are part of a Class A Unit are immediately separable and will be issued separately in this offering.

We are also offering to those purchasers, if any, whose purchase of Class A Units in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% of our outstanding common stock immediately following the consummation of this offering, the opportunity, in lieu of purchasing Class A Units, to purchase Class B Units. Each Class B Unit will consist of one share of our newly designated Series A Convertible Preferred Stock, or the Series A Preferred, with a stated value of $1,000 and be convertible into shares of our common stock at the public offering price of the Class A Units, together with the equivalent number of warrants as would have been issued to such purchaser if they had purchased Class A Units based on the public offering price. The shares of Series A Preferred do not generally have any voting rights unless and until converted into shares of common stock. The shares of Series A Preferred and warrants that are part of a Class B Unit are immediately separable and will be issued separately in this offering.

The number of shares of our common stock outstanding after this offering will fluctuate depending on how many Class B Units are sold in this offering and whether and to what extent holders of Series A Preferred shares convert their shares to common stock.

Our common stock is listed on The Nasdaq Capital Market under the symbol “TTNP”. On September 10, 2018, the last reported sale price of our common stock on The Nasdaq Capital Market was $0.67 per share. The public offering price per Class A Unit will be determined between us and the underwriter based on the closing price of our common stock on the pricing date and market conditions at the time of pricing, and may be at a discount to the current market price. The public offering price of the Class B Units will be $1,000 per unit.

Assuming an offering price of $0.67 per Class A unit, the Series A Preferred included in the Class B Units will be convertible into an aggregate total of 19,029,851 shares of Common Stock and the warrants included in the Class B Units will be exercisable for an aggregate total of 9,514,926 shares of Common Stock.

There is no established trading market for the warrants or the Series A Preferred, and we do not expect an active trading market to develop. We do not intend to list the warrants or the Series A Preferred on any securities exchange or other trading market. Without an active trading market, the liquidity of the warrants and the Series A Preferred will be limited.

Our business and an investment in our securities involves a high degree of risk. See “Risk Factors” beginning on page 9 of this prospectus for a discussion of information that you should consider before investing in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Class A Unit	Per Class B Unit	Total
Public offering	$	$	$
Underwriting discounts and commissions[(1)]	$	$	$
Proceeds to us, before expenses	$	$	$

(1) The underwriters will receive compensation in addition to the underwriting discount and commissions. See “Underwriting” beginning on page 48 of this prospectus for a description of compensation payable to the underwriters.

We have granted a 45-day option to the underwriters to purchase additional shares of common stock and/or additional warrants to purchase shares of common stock, in amounts up to 15% of the common stock, warrants and/or common stock issuable upon conversion of the Series A Preferred included in the Units sold in the offering.

The underwriters expect to deliver the securities against payment therefor on or about , 2018.

Sole Book-Running Manager

A.G.P.

Co-Manager

CIM Securities, LLC

, 2018

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You should rely only on the information contained or incorporated by reference in this prospectus. Neither we nor the underwriters have authorized anyone to provide you with information different from, or in addition to, that contained or incorporated by reference in this prospectus or any free writing prospectus prepared by or on behalf of us or to which we may have referred you in connection with this offering. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. Neither we nor any of the underwriters is making an offer to sell or seeking offers to buy these securities in any jurisdiction where, or to any person to whom, the offer or sale is not permitted. The information contained or incorporated by reference in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or of any sale of shares of our common stock, and the information in any free writing prospectus that we may provide you in connection with this offering is accurate only as of the date of that free writing prospectus. Our business, financial condition, results of operations and future growth prospects may have changed since those dates

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. The industry publications and industry data contained in this prospectus have been obtained from sources believed to be reliable.

For investors outside the United States: Neither we nor any of the underwriters have taken any action that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities covered hereby and the distribution of this prospectus outside of the United States.

PROSPECTUS SUMMARY

This summary provides an overview of selected information contained elsewhere or incorporated by reference in this prospectus and does not contain all of the information you should consider before investing in our securities. You should carefully read this prospectus and the registration statement of which this prospectus is a part in their entirety before investing in our securities, including the information discussed under "Risk Factors" and our financial statements and notes thereto that are incorporated by reference in this prospectus. Unless otherwise indicated herein, the terms "Titan," "we," "our," "us," or "the Company" refer to Titan Pharmaceuticals, Inc.

Company Overview

We are a pharmaceutical company developing proprietary therapeutics utilizing our proprietary long-term drug delivery platform for the treatment of select chronic diseases for which steady state delivery of a drug provides an efficacy and/or safety benefit. We are currently transitioning to a commercial stage enterprise having recently re-acquired Probuphine®, a product approved in the U.S. for management of opiate dependence.

Probuphine, our first product candidate based on our proprietary ProNeura™ platform, is a subdermal implant that provides continuous delivery of buprenorphine for six months. Probuphine was approved by the United States Food and Drug Administration, or FDA, in May 2016 for the maintenance treatment of opioid dependence in patients who are stable on low to moderate doses of daily sublingual buprenorphine treatment. We licensed development and commercialization rights of Probuphine for the U.S. and Canadian markets to Braeburn Pharmaceuticals, Inc., or Braeburn, in December 2012. Braeburn subsequently sublicensed the Canadian rights to Knight Therapeutics Inc., or Knight, in February 2016. In April 2018, Knight announced that it had received regulatory approval from Health Canada to commercialize the product for the maintenance treatment of stable patients with opioid use disorder.

In early 2018, Braeburn substantially reduced its field sales force and medical liaison personnel following its receipt of a complete response letter from the FDA for its weekly and monthly depot injection products. Anticipating a negative impact on Probuphine sales in the U.S., we began discussing with Braeburn terms for the return of the Probuphine U.S. commercialization rights to Titan. On May 25, 2018, we entered into an agreement with Braeburn under which we received a $1 million payment from Braeburn and Braeburn's undertaking to provided transition services through 2018 to assist with commercialization activities and help maintain continuity in product supply for patients and their physicians.

Since reacquiring the rights, we have begun implementation of a strategy to relaunch Probuphine to targeted market segments that we believe are best suited to benefit from this product. We intend to use a substantial portion of the proceeds of this offering to build our infrastructure, including a small sales and marketing team, which will enable us to successfully transition to a commercial enterprise and position Probuphine as a specialty product.

On March 21, 2018, we entered into an agreement, or the 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 exclusive right to commercialize the Titan supplied product in Europe, as well as certain countries of the Commonwealth of Independent States, the Middle East and North Africa, or the Molteni Territory, in exchange for upfront, milestone and earn-out payments for up to 15 years on net sales of Probuphine in the Molteni Territory. We are working with Molteni in connection with the Marketing Authorization Application, or MAA, currently under review by the European Medicines Agency, or EMA, with the goal of receiving approval to commercialize Probuphine in the European Union, or EU, in the first half of 2019.

We believe that our ProNeura long term drug delivery platform has the potential to be used in the treatment of other chronic conditions where maintaining stable, around the clock blood levels of a medication may benefit the patient and improve medical outcomes. Our goal is to expand our product pipeline using the ProNeura implant platform, and, depending on available funds, we have been opportunistically evaluating other drugs and disease settings for use with the ProNeura platform in

potential treatment applications such as Parkinson's disease, where conventional treatment is limited by variability in blood drug levels and poor patient compliance. The pursuit of any of these programs in the short-term will depend on our ability to obtain the necessary funding through either government grants or third party collaborations.

Our Market Opportunity

Opioid Use Disorder, or OUD, is a severe, chronic, relapsing brain disease characterized by compulsive drug seeking and use, despite the harmful consequences. Sufferers experience cravings of opioids, accompanied by lack of impulse control. OUD is a progressive disease that is characterized by cycles of relapse and remission and often results in disability or death if left untreated. It is estimated that during 2016, 2.3 million people were diagnosed with OUD and close to 12 million people used opioids. According to government publications, the U.S. societal costs of opioid abuse total $78.5 billion annually and over 115 people die each day as a direct result of their addiction. The U.S. government considers OUD an epidemic and has made available substantial funds through federal and state agencies to control the spread of the epidemic and support evidence-based treatments.

Current treatment approaches to OUD include abstinence-based 12-step programs, a rarely successful therapeutic approach, drug counseling and medication assisted therapies, or MAT. Cravings may persist for years even in the face of abstinence from illicit opiates, leading to a high incidence of relapse in patients not maintained on longer term MAT. The current MAT gold standard is daily treatment with sublingual buprenorphine, a medication that controls the withdrawal symptoms and cravings without inducing opioid euphoria in patients. A 30-day depot formulation was recently approved by the FDA and similar depot buprenorphine products are under FDA review in both weekly and monthly formulations. Unlike methadone, sublingual buprenorphine can be prescribed as an outpatient treatment, making it a convenient option for patients, and U.S. sales of formulations of buprenorphine are approximately $2.0 billion annually. There are challenges, however, associated with daily dosed formulations, including:

- voluntary compliance;
- potential reinforcement of drug-taking behavior;
- variable levels of medication in the blood; and
- diversion, abuse and accidental pediatric overdose.

Probuphine is a safe, effective long-term, subdermal treatment for selected patients that addresses these challenges by:

- releasing buprenorphine continuously for six months;
- providing a stable level of medication in the blood, avoiding peaks and troughs of oral dosing; and
- minimizing or eliminating the potential for diversion or accidental overdose.

Our Commercial Strategy for Probuphine Relaunch

We are currently transitioning all the Probuphine commercialization activities from Braeburn to Titan which include the supply chain and logistics functions, as well as the Medical Affairs and Risk Evaluation Mitigation Strategy, or REMS, training and reporting activities. We expect to complete most of the transition during the third quarter of 2018, and expect to commence the relaunch of Probuphine under the Titan brand in 2018. We are pursuing a targeted market strategy that focuses on establishing a beachhead in select market segments where Probuphine can provide meaningful benefit for the patient allowing for sustained market penetration and sales growth. We plan to establish a small commercial team of no more than 10 specialists with experience in product marketing and supply chain logistics, medical liaison and training functions, third party payer medical access and field sales. This team will focus initially on four key market segments, specifically:

- ***High Probuphine-prescribing physicians with long-term recovery oriented treatment programs.*** There are a substantial number of certified physicians who are currently treating OUD with Probuphine, all of whom are identified in our data base. Our plan is to initially focus

on the top tier of prescribers to facilitate the growth of their businesses through increased utilization of Probuphine. Utilizing some of the top tier providers, we will establish centers of excellence that will provide sites for referrals from other health care providers. In addition, our medical access specialists will provide resources to help lessen the complexity of the supply chain and reimbursement process. In the longer term, some top tier Probuphine providers will also engage in investigator sponsored research which can generate new and clinically meaningful data, some of which will help us assess the potential for label expansion.

- ***Residential treatment facilities.*** Historically, these facilities have mostly relied on 12-step programs with the goal of complete and sustained abstinence while avoiding any MAT. However, the success of such programs has not withstood scrutiny, as it has been increasingly recognized that a very high percentage of patients with opiate addiction ultimately relapse. Consequently, the use of MAT as part of the management of OUD has been increasing, and is expected to rise substantially in the near term. Our plan is to establish alliances with a few large programs.
- ***Academic institutions with addiction treatment and training programs.*** We plan to form alliances with institutions that already have the necessary trained personnel and equipment for doing small procedures, and facilitate the introduction and/or increased use of Probuphine for appropriate patients. This will also serve to introduce Probuphine to the next generation of addiction specialists. In the longer term, we expect that key opinion leaders, or KOLs, at some of these sites will initiate investigator sponsored studies which can generate clinically meaningful data while helping us assess the potential for label expansion.
- ***Criminal justice system.*** In recent years there has been increasing recognition that the rate of recidivism among inmates with opiate addiction is very high. In addition, the incidence of overdose and death is high for recently released inmates who have "detoxed" while incarcerated (often through abrupt withdrawal or "cold turkey"). Early data suggests the use of MAT in this population can decrease recidivism and the incidence of overdose deaths. Our plan is to initially establish pilot projects with a few select criminal justice programs, with the goal of generating meaningful data that potentially supports the use of Probuphine in this setting.

We expect that demonstration of early success in these market segments will serve to increase partnering opportunities, which will then sustain and accelerate future growth of Probuphine.

Risks Related to Our Business

- We may not be successful in transitioning from a research and development company to a commercial enterprise.
- If Probuphine does not achieve broad market acceptance by physicians, patients or others in the medical community or coverage by third-party payors, our business will be suffer.
- We must comply with extensive government regulations.
- The Probuphine REMS program has adversely impacted sales and marketing efforts to date and may continue to do so, which could materially adversely impact our business prospects.
- The FDA-approved product labeling for Probuphine allows prescribing for a limited patient population.
- Probuphine is a controlled substance subject to DEA regulations and failure to comply with these regulations, or the cost of compliance with these regulations, may adversely affect our business.
- We may be subject to enforcement action if we engage in improper marketing or promotion of Probuphine.
- We rely on third parties to provide services in connection with the manufacture and distribution of Probuphine, and these third parties may not perform satisfactorily.
- We are solely reliant on the efforts of third parties to commercialize Probuphine outside of the United States.

- Our current ProNeura programs are at a very early stage and we may not be able to successfully develop these products or any other product based on our ProNeura drug delivery technology.
- Clinical trials required for new product candidates are expensive and time-consuming, and their outcome is uncertain.
- We face risks associated with third parties conducting preclinical studies and clinical trials of our products.
- We face risks associated with product liability lawsuits that could be brought against us.
- We may be unable to protect our patents and proprietary rights.
- We face intense competition.
- Health care reform measures and changes in policies, funding, staffing and leadership at the FDA and other agencies could hinder or prevent the commercial success of our products.
- We may not be able to implement our business plan if we are unable to attract and retain key personnel and consultants.

Corporate Information

We were incorporated under the laws of the State of Delaware on February 7, 1992. Our principal executive offices are located 400 Oyster Point Boulevard, Suite 505, South San Francisco, CA 94080. Our telephone number is (650) 244-4990. Our website address is www.titanpharm.com. We make our periodic and current reports that are filed with the SEC available, free of charge, on our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The information contained in, and that can be accessed through, our website is not incorporated into and is not a part of this prospectus.

This prospectus may contain references to our trademark and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other company.

THE OFFERING

Class A Units offered	3,358,209 Class A Units with each Class A Unit consisting of one share of our common stock and a warrant to purchase 0.5 of a share of our common stock at an exercise price equal to per whole share of common stock. The Class A Units will not be certificated and the share of common stock and warrant that are part of such unit will be immediately separable and will be issued separately in this offering.
Class B Units offered	12,750 Class B Units are also being offered to those purchasers, if any, whose purchase of Class A Units in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% of our outstanding common stock immediately following the consummation of this offering. Each Class B Unit will consist of one share of our Series A Preferred, with a stated value of $1,000 and convertible into shares of our common stock, at the public offering price of the Class A Units, together with the equivalent number of warrants as would have been issued to such purchaser if they had purchased Class A units based on the public offering price. The shares of Series A Preferred generally do not have any voting rights but are convertible into shares of common stock. The Class B Units will not be certificated and the shares of Series A Preferred and warrants that are part of such unit are immediately separable and will be issued separately in this offering.
Warrants	Each warrant included in the Units will have an exercise price equal to per whole share of common stock, will be exercisable upon issuance, and will expire five years from the date of issuance.
Underwriters' option to purchase additional securities	We have granted a 45-day option to the underwriters to purchase additional shares of common stock and/or additional warrants to purchase shares of common stock, in amounts up to 15% of the common stock, warrants and/or common stock issuable upon conversion of the Series A Preferred included in the Units sold in the offering.
Common stock to be outstanding immediately after this offering	24,561,953 shares. If the underwriters' option to purchase additional securities is exercised in full, the total number of shares of our common stock outstanding immediately following the option exercise will be 25,065,684 shares. Excludes shares of common stock that may be issued upon exercise of the warrants and conversion of the Series A Preferred to be issued in this offering. Excludes shares of common stock that may be issued upon exercise of the warrants and conversion of the Series A Preferred to be issued in this offering and exercise of the representative's warrants.

Series A Convertible Preferred Stock	The Series A Preferred will be convertible into shares of our common stock (subject to adjustment as provided in the related certificate of designation of preferences, rights and limitations) at any time at the option of the holder, at the public offering price of the Class A Units. See "Description of Securities — Preferred Stock — Series A Convertible Preferred Stock" for a discussion of the terms of the Series A Preferred.
Use of proceeds	We estimate that the net proceeds in this offering will be approximately $13.6 million, or approximately $15.7 million if the underwriters exercise their option to purchase additional securities in full, at an assumed public offering price of $0.75 per Class A Unit and $1,000 per Class B Unit, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We anticipate that we will use the net proceeds from this offering for our operations and for other general corporate purposes, including, but not limited to, building our infrastructure, including a small sales and marketing team, to commercialize Probuphine, conduct of the Phase IV trials required by the FDA, our internal research and development programs and general working capital. See "Use of Proceeds" on page 29.
Risk factors	See "Risk Factors" beginning on page 9 and the other information included in this prospectus for a discussion of factors you should carefully consider before investing in our securities.
Nasdaq Capital Market symbol	Our common stock currently trades on The Nasdaq Capital Market under the symbol "TTNP" There is no established public trading market for the warrants or Series A Preferred, and we do not expect an active trading market to develop. We do not intend to list the warrants or the Series A Preferred on any securities exchange or other trading market. Without an active trading market, the liquidity of the warrants and the Series A Preferred will be limited.

The number of shares of our common stock that will be outstanding immediately after this offering is based on 21,203,744 shares of common stock outstanding as of September 10, 2018, and excludes as of such date:

- 3,498,650 shares of common stock issuable upon exercise of outstanding options at a weighted average exercise price of $3.39 per share, of which 2,839,235 shares are vested as of such date;
- 1,119,750 shares of common stock reserved for future issuance under the Titan Pharmaceuticals, Inc. 2015 Omnibus Equity Incentive Plan, as amended, or the 2015 Plan;
- 1,708,181 shares of common stock issuable upon exercise of warrants outstanding at a weighted average exercise price of $2.37;
- 2,000,000 shares of common stock issuable upon conversion of $2.4 million principal amount of outstanding indebtedness;

- shares of our common stock issuable upon exercise of the warrants to be issued in this offering; and
- shares of our common stock issuable upon conversion of the Series A Preferred to be issued in this offering.

The number of shares of our common stock outstanding after this offering will fluctuate depending on how many Class B Units are sold in this offering and whether and to what extent holders of Series A Preferred shares convert their shares to common stock.

To the extent we sell any Class B Units in this offering, the same aggregate number of common stock equivalents resulting from this offering would be convertible under the Series A Preferred issued as part of the Class B Units.

Except as otherwise indicated herein, all information in this prospectus, including the number of shares that will be outstanding after this offering, assumes no exercise by the underwriters of their option to purchase additional securities and excludes shares of our common stock issuable upon exercise of the representative's warrants (4% of the shares of common stock sold in this offering, including shares issuable upon conversion of the Series B Preferred but excluding any securities sold upon exercise of the underwriter's option to purchase additional securities or shares issuable upon exercise of the warrants).

SUMMARY CONSOLIDATED FINANCIAL DATA

(in thousands, except per share data)

The following table summarizes our selected financial data for the periods and as of the dates indicated. Our selected statements of operations data for the years ended December 31, 2017 and 2016, respectively, and our selected balance sheet data as of December 31, 2017 and 2016, have been derived from our audited financial statements, which are incorporated by reference in this prospectus. Our selected statements of operations data for each of the six month periods ended June 30, 2018 and 2017, and our selected balance sheet data as of June 30, 2018, have been derived from our unaudited financial statements, which are incorporated by reference in this prospectus. The interim unaudited financial statements have been prepared on the same basis as the annual audited financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair presentation of the information for the periods presented. Our financial statements are prepared and presented in accordance with generally accepted accounting principles in the United States. Our historical results are not necessarily indicative of the results to be expected for any future periods. Our selected financial data should be read together with the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and with our financial statements and their related notes, which are incorporated by reference in this prospectus.

	Six Months Ended June 30,		Years Ended December 31,	
	2018	2017	2017	2016
	(Unaudited)			
Statement of Operations Data:				
Total revenue	$ 3,732	$ 117	$ 215	$15,065
Operating expenses:				
Cost of goods sold	70	—	—	—
Research and development	3,713	4,627	9,648	6,126
General and administrative	2,995	2,548	5,069	4,596
Other income (expense), net	(428)	602	195	792
Net income (loss) applicable to common stockholders	$ (3,474)	$ (6,456)	$(14,307)	$ 5,135
Basic net income (loss) per common share	$ (0.16)	$ (0.30)	$ (0.67)	$ 0.25
Diluted net income (loss) per common share	$ (0.16)	$ (0.33)	$ (0.70)	$ 0.20
Shares used in computing:				
Basic net income (loss) per common share	21,204	21,199	21,203	20,744
Diluted net income (loss) per common share	21,204	21,201	21,228	21,459

	As of June 30, 2018 (Unaudited)
Balance Sheet Data:	
Cash and cash equivalents	$ 1,614
Total assets	$ 4,617
Total liabilities	$ 5,930
Total stockholders' equity (deficit)	$ (1,313)

RISK FACTORS

Any investment in our securities involves a high degree of risk. Investors should carefully consider the risks described below and all of the information contained or incorporated by reference in this prospectus before deciding whether to purchase our common stock. Our business, financial condition or results of operations could be materially adversely affected by these risks if any of them actually occur. This prospectus also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks we face as described below and elsewhere in this prospectus.

Risks Related to Our Business

We may not be successful in transitioning from a research and development company to a commercial enterprise.

Since our inception, we have been engaged in product research and development and have never directly commercialized any product. Since we regained the U.S. commercial rights to Probuphine in May 2018, we have been largely dependent on Braeburn's provision of support services, as well as those of advisors and consultants, as we transition to a commercial enterprise. We do not currently employ a sales force or have any internal sales and marketing capabilities. Without hiring or contracting for an experienced and active sales force, we will not be in a position to relaunch Probuphine and sales, if any, will continue to be limited. We will face intense competition for sales and marketing personnel with the necessary experience in addiction, reimbursement, specialty pharmacies and our targeted markets and there can be no assurance that we will be successful in our efforts to transition to a commercial stage company.

If Probuphine does not achieve broad market acceptance by physicians, patients or others in the medical community or coverage by third-party payors, our business will suffer.

Although Braeburn commenced a full commercial launch of Probuphine in the first quarter of 2017, minimal progress was made and for the year ended December 31, 2017 we derived royalty revenues of only $215,000 from sales of Probuphine. The commercial success of Probuphine and our product relaunch will depend upon its acceptance by physicians, patients, healthcare payors and the medical community. Coverage and reimbursement of Probuphine by third-party payors is also necessary for commercial success. Since its initial commercial launch by Braeburn, Probuphine's adoption by physicians has been hindered both by the Risk Evaluation and Mitigation Strategy, or REMS, requirements mandated by the product label, which are more expansive than those required for other buprenorphine products, as well as the current payment and reimbursement model, which differs from some of the existing treatment options for opioid addiction. For example, the current standard of care for outpatient treatment of opioid addiction is oral daily buprenorphine, which typically requires frequent patient visits and a per visit fee, which the patient may pay directly to the healthcare provider in cash. Reimbursement for an implantable drug product that requires administration by a healthcare provider requires drug codes as well as a separate procedure code for the insertion and removal procedures and less frequent office visits. Physicians may prefer more frequent patient visits and the accompanying reimbursement and payment model, which oftentimes includes cash payments. The commercial success of Probuphine depends on several factors, including:

- our ability to train and certify healthcare providers to insert and remove implants of Probuphine in accordance with the REMS;
- the perceived and actual advantages of our Probuphine over current and emerging treatment options;
- the willingness of healthcare providers to prescribe, and the target patient population to try novel products;
- the competitiveness of our pricing;
- the willingness of healthcare providers to accept alternative reimbursement models, such as the "buy-and-bill" system, where prescribers are required to buy Probuphine inventory themselves and

then bill patients or payors following the procedure, or the specialty pharmacy distribution model, where a specialty pharmacy carries inventory and ships it to healthcare providers as requested and prescribed, and directly handles the subsequent billing and payment process with payors;

- our ability to provide adequate support to physicians and other healthcare providers to lessen the burden of current reimbursement models;
- our ability to establish and maintain adequate levels of coverage for Probuphine from commercial health plans and government health programs, which we refer to collectively as third-party payors, particularly in light of the availability of other branded and generic competitive products;
- the willingness for patients to pay out-of-pocket in the absence of third-party coverage and the success of patient assistance programs;
- our ability to promote products through marketing and sales activities and any other arrangements; and
- our ability to successfully educate prescribers and patients on the applicable product's efficacy and safety.

In light of the difficulties encountered to date, we cannot predict either the timing or the degree to which Probuphine will be accepted by the medical community. If we are unable to generate ample royalty revenue from Probuphine, we will be unable to fund our research and development programs without additional financing, which may not be available on acceptable terms, and our business will be materially harmed.

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.

The New Drug Application, or NDA, for Probuphine mandated the post-approval completion of several Phase IV clinical trials. Prior to the reversion of the commercialization rights to us, Braeburn had been in negotiations with the FDA with respect to the various trial protocols and had not commenced the required clinical trials. Upon transfer of the NDA back to us, we began communicating with the FDA regarding the Phase IV requirements. There can be no assurance that the FDA will provide us with the time we need to initiate and complete the necessary clinical trials, or that we will have the necessary funds to do so, in which event we may be subject to possible sanctions, including monetary penalties or suspension of Probuphine commercial activities. Furthermore, unexpected negative findings from a Phase IV trial could negatively impact the product label and/or acceptance by patients, healthcare providers and insurers.

The Probuphine REMS program has negatively impacted initial uptake in sales and may continue to do so, which could materially adversely impact our business prospects.

There is currently a REMS program in place for Probuphine as required by the FDA. The REMS program was implemented by Braeburn in May 2016 and is designed to mitigate the risk of complications of migration, protrusion, expulsion and nerve damage associated with the insertion and removal of Probuphine and the risks of accidental overdose, misuse and abuse. The REMS program requires training and certification of healthcare providers who prescribe and implant Probuphine and provide patient

counseling. Probuphine distribution is restricted to healthcare providers who have completed training and received certification under the REMS program. We believe the REMS program has been an obstacle to acceptance of Probuphine to date by the medical community. Healthcare providers may be unwilling to undergo training and certification in order to be able to prescribe or implant Probuphine due to time constraints or concerns with the product. If we are unable to adequately address this issue, our ability (or the ability of potential future commercial partners) to generate revenue from sales of Probuphine could be materially compromised, which would have a material adverse effect on our business, results of operations, financial condition and prospects. In addition, if a patient suffers an injury during the insertion and removal of Probuphine, we may become liable to patients, clinicians or others or result in our non-compliance with the REMS program. Non-compliance with the REMS program may bring serious consequences to us, including warning letters from the FDA, fines, criminal charges and other prohibitions and exclusions as well as reputational damage.

The FDA-approved product labeling for Probuphine allows prescribing for a limited patient population.

Probuphine was approved with an indicated use limited to the long-term maintenance treatment of opioid dependence in clinically stable patients on 8 mg or less a day of oral buprenorphine. The approved labeling also contains other limitations on use and warnings and contraindications for risks. If potential purchasers or those influencing purchasing decisions, such as physicians and pharmacists or third party payers, react negatively to Probuphine because of their perception of the limitations or safety risks in the approved product labeling, it may result in lower product acceptance and lower product revenues.

In addition, our promotion of Probuphine must reflect only the specific approved indication as well as other limitations on use, and disclose the safety risks associated with the use of Probuphine as set out in the approved product labeling. We must submit all promotional materials to the FDA at the time of their first use. If the FDA raises concerns regarding our promotional materials or messages, we may be required to modify or discontinue using them and provide corrective information to healthcare practitioners, and we may face other adverse enforcement action.

Probuphine is a controlled substance subject to Drug Enforcement Agency, or DEA, regulations and failure to comply with these regulations, or the cost of compliance with these regulations, may adversely affect our business.

Probuphine contains buprenorphine, a regulated Schedule III "controlled substance" under the Controlled Substances Act, which establishes, among other things, certain registration, production quotas, security, recordkeeping, reporting, import, export and other requirements administered by the DEA. The DEA regulates controlled substances as Schedule I, II, III, IV or V substances. Schedule I substances by definition have no established medicinal use and may not be marketed or sold in the United States. A pharmaceutical product may be listed as Schedule II, III, IV or V, with Schedule II substances considered to present the highest risk of abuse and Schedule V substances the lowest relative risk of abuse among such substances. Our failure to comply with DEA requirements could result in the loss of our ability to supply Probuphine, significant restrictions on Probuphine, civil penalties or criminal prosecution.

The DEA, and some states, also conduct periodic inspections of registered establishments that handle controlled substances. Facilities that conduct research, manufacture, store, distribute, import or export controlled substances must be registered to perform these activities and have the security, control and inventory mechanisms required by the DEA to prevent drug loss and diversion. Failure to maintain compliance, particularly non-compliance resulting in loss or diversion, can result in regulatory action that could have a material adverse effect on our business, results of operations, financial condition and prospects. The DEA may seek civil penalties, refuse to renew necessary registrations or initiate proceedings to revoke those registrations. In certain circumstances, violations could lead to criminal proceedings.

Individual states also have controlled substances laws. Though state controlled substances laws often mirror federal law, because the states are separate jurisdictions, they may separately schedule drugs, as well. While some states automatically schedule a drug when the DEA does so, in other states there has to be rulemaking or a legislative action. State scheduling may delay commercial sale of any controlled substance drug product for which we obtain federal regulatory approval and adverse scheduling could have a material adverse effect on the commercial attractiveness of such product. We or our partners must also obtain

separate state registrations in order to be able to obtain, handle, and distribute controlled substances for clinical trials or commercial sale, and failure to meet applicable regulatory requirements could lead to enforcement and sanctions from the states in addition to those from the DEA or otherwise arising under federal law.

We may be subject to enforcement action if we engage in improper marketing or promotion of Probuphine.

Our promotional materials and training methods must comply with the Federal Food, Drug and Cosmetic Act, or the FDCA, and FDA regulations and other applicable laws and regulations, including the prohibition of the promotion of unapproved, or "off-label", use. Companies may not promote drugs for off-label use, which include uses that are not described in the product's labeling and that differ from those approved by the FDA. Physicians may prescribe drug products for off-label uses and such off-label uses are common across some medical specialties. Although the FDA and other regulatory agencies do not regulate a physician's choice of treatments, the FDCA and FDA regulations restrict communications on the subject of off-label uses of drug products by pharmaceutical companies. The Office of Inspector General of the Department of Health and Human Services, or OIG, the FDA, and the Department of Justice, or DOJ, all actively enforce laws and regulations prohibiting promotion of off-label use and the promotion of products for which marketing approval has not been obtained.

Other federal, state and foreign regulatory agencies, including the U.S. Federal Trade Commission, have issued guidelines and regulations that govern how we promote our products, including how we use endorsements and testimonials.

If we are found to be out of compliance with the requirements and restrictions described above, and we are investigated for or found to have improperly promoted off-label use, we may be subject to significant liability, including civil and administrative remedies as well as criminal sanctions, and the off-label use of our products may increase the risk of product liability claims. In addition, management's attention could be diverted from our business operations and our reputation could be damaged.

In addition to FDA and related regulatory requirements, we are subject to health care "fraud and abuse" laws, such as the federal False Claims Act, the anti-kickback provisions of the federal Social Security Act, and other state and federal laws and regulations. Federal and state anti-kickback laws prohibit, among other things, payments or other remuneration to induce or reward someone to purchase, prescribe, endorse, or recommend a product that is reimbursed under federal or state healthcare programs. If we provide payments or other remuneration to a healthcare professional to induce the prescribing of our products, we could face liability under state and federal anti-kickback laws.

Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to get a false claim paid. Pharmaceutical companies have been prosecuted under these laws for a variety of alleged promotional and marketing activities, such as allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product or submitting inflated best price information to the Medicaid Rebate program. The majority of states also have statutes or regulations similar to the federal anti-kickback law and false claims laws, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payer. Sanctions under these federal and state laws may include civil monetary penalties, exclusion of a manufacturer's products from reimbursement under government programs, criminal fines, and imprisonment. Even if it is determined that we have not violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which would harm our business, prospects, operating results, and financial condition. Because of the breadth of these laws and the narrowness of the safe harbors, it is possible that some of our business activities could be challenged under one or more of such laws.

Additionally, requirements under the federal Open Payments program, created under Section 6002 of the Affordable Care Act and its implementing regulations, require that manufacturers of drugs for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) report annually to HHS information related to "payments or other transfers of value" provided to U.S. physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and

teaching hospitals. The Open Payments program also requires that manufacturers and applicable group purchasing organizations report annually to HHS ownership and investment interests held in them by physicians (as defined above) and their immediate family members. Manufacturers' reports are filed annually with the Centers for Medicare & Medicaid Services ("CMS") by each March 31, covering the previous calendar year. CMS posts disclosed information on a publicly available website. There are also an increasing number of state laws that restrict or prohibit pharmaceutical manufacturers' interactions with health care providers licensed in the respective states, and that require pharmaceutical manufacturers to, among other things, establish comprehensive compliance programs, adopt marketing codes of conduct, file periodic reports with state authorities regarding sales, marketing, pricing, and other activities, and register/license their sales representatives. A number of state laws require manufacturers to file reports regarding payments and items of value provided to health care providers (similar to the federal Open Payments program). Many of these laws contain ambiguities as to what is required to comply with the laws. These laws may affect our sales, marketing and other promotional activities by imposing administrative and compliance burdens on us. In addition, given the lack of clarity with respect to these laws and their implementation, our reporting actions could be subject to the penalty provisions of the pertinent state and federal authorities.

Because of the breadth of these laws and the narrowness of available statutory and regulatory exemptions, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If our operations are found to be in violation of any of the federal and state laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including criminal and significant civil monetary penalties, damages, fines, imprisonment, exclusion from participation in government healthcare programs, injunctions, recall or seizure of products, total or partial suspension of production, denial or withdrawal of pre-marketing product approvals, private qui tam actions brought by individual whistleblowers in the name of the government or refusal to allow us to enter into supply contracts, including government contracts and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. With respect to any of our products sold in a foreign country, we may be subject to similar foreign laws and regulations, which may include, for instance, applicable privacy laws and post-marketing requirements, including safety surveillance, anti-fraud and abuse laws, and implementation of corporate compliance programs and reporting of payments or transfers of value to healthcare professionals.

We obtain some of our raw materials, components and finished goods from a single source or a limited group of suppliers. The partial or complete loss of one of these suppliers could cause significant production delays, an inability to meet customer demand and a substantial loss in revenue.

We use a number of single-source suppliers for certain of our raw materials, components and finished goods, including:

- the supplier of the active ingredient for Probuphine;
- the supplier of the finished Probuphine implants; and
- the manufacturer of the Probuphine applicator.

We are in the process of qualifying a new ethylene-vinyl acetate, or EVA, manufacturer. In addition, the vendor that used to sterilize the Probuphine implants indicated that it will no longer sterilize Schedule III controlled substances, including Probuphine. While we are in the process of qualifying another sterilization vendor and will also be transitioning to a new sterilization process, we cannot guarantee that such qualification or transition will be successful. Our use of these and other single-source suppliers of raw materials, components and finished goods exposes us to several risks, including disruptions in supply, price increases, late deliveries and an inability to meet customer demand. This could lead to customer dissatisfaction, damage to our reputation or customers switching to competitive products. Any interruption in supply could be particularly damaging to our ability to develop and commercialize Probuphine.

Finding alternative sources for these raw materials, components and finished goods would be difficult and in many cases entail a significant amount of time, disruption and cost. Any disruption in supply from any single-source supplier or manufacturing location could lead to supply delays or interruptions which would damage our business, financial condition, results of operations and prospects.

We rely on third parties to provide services in connection with the manufacture and distribution of Probuphine, and these third parties may not perform satisfactorily.

We do not own or operate, and currently do not plan to own or operate, facilities for production and packaging of Probuphine or our other product candidates. We are dependent on third parties for the timely supply of specified raw materials, equipment, contract manufacturing, formulation or packaging services, product distribution services, customer service activities and product returns processing. For example, we contract with DPT Laboratories, Ltd., or DPT, for the manufacture of Probuphine, which in turn depends on delivery of the active ingredient buprenorphine hydrochloride and milled EVA, which we currently source from Teva Pharmaceuticals, Inc. and Southwest Research Institute, respectively. We are similarly dependent on third parties for the manufacture and sterilization of Probuphine applicators and the assembly and distribution of packaged kits.

Our reliance on third parties for the activities described above will reduce our control over these activities but will not relieve us of our responsibility to ensure compliance with all required regulations. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or manufacture our product in accordance with regulatory requirements, or proprietary specifications, or adhere to product processing best practices, or if there are disagreements between us and these third parties, our business could be materially adversely impacted.

We are solely reliant on the efforts of third parties to commercialize Probuphine outside of the United States.

Our ability to generate revenues from the sale of Probuphine in the European Union and the rest of the Molteni Territory, assuming regulatory approval is ultimately obtained, will be wholly dependent on Molteni's ability to successfully launch and commercialize the product in the Molteni Territory. We are similarly dependent on the efforts of Knight with respect to product launch and commercialization in Canada. We do not have control over the amount and timing of resources that Molteni will dedicate to these efforts. We will be similarly dependent on the development, regulatory and marketing efforts of third parties with respect to revenues, if any, from sales of Probuphine in additional territories.

Our dependence on third party collaborators and license agreements subjects us to a number of risks, including:

- our collaborators may not comply with applicable regulatory guidelines with respect to developing or commercializing our products, which could adversely impact sales or future development of our products;
- we and our collaborators could disagree as to future development plans and our collaborators may delay, fail to commence or stop future clinical trials or other development; and
- there may be disputes between us and our collaborators, including disagreements regarding the license agreements, that may result in the delay of or failure to achieve developmental, regulatory and commercial objectives that would result in milestone or royalty payments and/or the delay or termination of any future development or commercialization of our products.

In addition, collaborators may, to the extent permitted by our agreements, develop products that divert resources from our products, preclude us from entering into collaborations with their competitors or terminate their agreements with us prematurely. Moreover, disagreements could arise with our collaborators or strategic partners over rights to our intellectual property and our rights to share in any of the future revenues from products or technologies resulting from use of our technologies, or our activities in separate fields may conflict with other business plans of our collaborators.

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

To date, we have conducted limited research and development activities based on our ProNeura delivery system beyond Probuphine. We will require substantial additional funds to support our research and development activities, and the anticipated costs of preclinical studies and clinical trials, regulatory approvals and eventual commercialization of ProNeura for Parkinson's disease or any therapeutic based on our ProNeura platform technology. If we are unable to obtain substantial government grants, enter into

third party collaborations or generate sufficient revenues from the sale of Probuphine 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 do not succeed in obtaining the requisite funding for our ProNeura programs, we will be unable to initiate clinical trials or obtain approval of any product candidates from the FDA and other regulatory authorities. In addition, we could be forced to discontinue product development, forego sales and marketing efforts and forego attractive business opportunities.

To the extent we raise additional capital through the sale of equity securities, the issuance of those securities could result in dilution to our stockholders. In addition, if we obtain debt financing, a substantial portion of our operating cash flow may be dedicated to the payment of principal and interest on such indebtedness, thus limiting funds available for our business activities. If adequate funds are not available, we may be required to delay, reduce the scope of or eliminate our research and development programs, reduce our commercialization efforts or curtail our operations. In addition, we may be required to obtain funds through arrangements with collaborative partners or others that 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 current ProNeura programs are at a very early stage and we may not be able to successfully develop these products or any other product based on our ProNeura drug delivery technology.

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. If a significant portion of these development efforts are not successfully completed, required regulatory approvals are not obtained or any approved products are not commercially successfully, our business, financial condition, and results of operations may be materially harmed.

Our development and commercialization strategy for ProNeura depends, in part, upon the FDA's prior findings regarding the safety and efficacy of the active drug incorporated into the implant based on data not developed by us, but upon which the FDA may rely in reviewing our NDA submissions.

The current strategy for our ProNeura development programs is based, in part, on the expectation that the products we develop will be eligible for approval through the regulatory pathway under Section 505(b)(2) of the FDCA. Section 505(b)(2) of the FDCA allows an NDA to rely in part on data in the public domain or the FDA's prior conclusions regarding the safety and effectiveness of an approved drug product, which could expedite our development programs by potentially decreasing the amount of clinical data that would need to be generated in order to obtain FDA approval. If the FDA does not allow us to pursue the Section 505(b)(2) regulatory pathway as anticipated, we may need to conduct additional clinical trials, provide additional data and information, and meet additional standards for product approval. If this were to occur, the time and financial resources required to obtain FDA approval for any additional ProNeura products, and complications and risks associated with regulatory approval, would likely substantially increase. Moreover, inability to pursue the Section 505(b)(2) regulatory pathway may result in new competitive products reaching the market more quickly than those we have under development, which would adversely impact our competitive position and prospects. Even if we are able to utilize the Section 505(b)(2) regulatory pathway, there is no guarantee that this regulatory pathway will ultimately lead to accelerated product development or earlier approval. Moreover, notwithstanding the approval of many products by the FDA pursuant to Section 505(b)(2), over the last few years, some pharmaceutical companies and others have objected to the FDA's interpretation of Section 505(b)(2). If the FDA changes its interpretation of Section 505(b)(2), or if the FDA's interpretation is successfully challenged in court, this result could delay or even prevent the FDA from approving any Section 505(b)(2) NDAs that we submit. Such a result could require us to conduct additional testing and costly clinical trials, which could substantially delay or prevent the approval and launch of any new ProNeura products.

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

In order to obtain FDA approval to market a new drug product based on our ProNeura drug delivery technology, we must demonstrate proof of safety and effectiveness in humans. To meet these requirements, we must conduct "adequate and well controlled" clinical trials. 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 harm the development of that product candidate and other product candidates. This failure 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 would delay the filing of our NDAs with the FDA and, ultimately, our ability to commercialize our product candidates and generate product revenues. Any change 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 and technologies on an 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 face intense competition.

Competition in the pharmaceutical and biotechnology industries is intense. We face, and will continue to 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 these entities 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.

The commercial opportunity for Probuphine could be significantly harmed if competitors are able to develop alternative formulations and/or drug delivery technologies outside the scope of our capabilities. Our principal competition in the opioid addiction treatment market comes from manufacturers of oral buprenorphine products, including Indivior PLC, which markets the Suboxone and Subutex brands, as well from manufacturers of weekly or monthly injectable treatments, one of which was recently launched by Indivior PLC. Our competitors may also develop, acquire or license products that are more effective, more useful, better tolerated, subject to fewer or less severe side effects, more widely prescribed or accepted or less costly than ours and may also be more successful than we are in manufacturing and marketing their products. In addition, state pharmacy laws may permit pharmacists to substitute generic products for branded products if the products are therapeutic equivalents, or may permit pharmacists and pharmacy benefit managers to seek prescriber authorization to substitute generics in place of our products, which could significantly diminish demand for Probuphine. If we are unable to compete effectively with the marketed therapeutics of our competitors or if such competitors are successful in developing products that compete with Probuphine, our business, results of operations, financial condition and prospects may be materially adversely affected.

If we or our collaborators are unable to achieve and maintain adequate levels of coverage and reimbursement for Probuphine on reasonable pricing terms, or we or our collaborators fail to do so for any of our other product candidates for which we may receive regulatory approval, their commercial success may be severely limited.

Successful sales of Probuphine or any other product we may successfully develop will depend on the availability of adequate coverage and reimbursement from third-party payors, as well as the ease of use and transparency of such processes and systems once in place. Patients who are prescribed medicine for the treatment of their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their prescription drugs. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors are critical to new product acceptance. Third-party payors, whether governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In addition, in the United States, no uniform policy of coverage and reimbursement for drug products exists among third-party payors. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products such as ours when more established or lower cost therapeutic alternatives are already available or subsequently become available. Decisions regarding the extent of coverage and amount of reimbursement to be provided for products and product candidates that we develop will be made on a plan-by-plan basis. As a result, the coverage determination process is often a time-consuming and costly process that may require us or our partners to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained.

Reimbursement for implantable drug products that require administration by a healthcare provider generally requires a drug code, and separate reimbursement codes are required for the insertion and removal procedures. The timely availability of a drug code or procedure code that covers our product or describes the procedures performed using our products, or a change to an existing code that describes such procedures is critical for successful commercialization and the lack of such codes may adversely affect reimbursement for our products and these procedures, including lower reimbursement rates, denials and delays in reimbursement if pre-authorization is required. Even if coverage is approved, the resulting reimbursement payment rates might not be adequate or may require co-payments that patients find unacceptably high. Patients are unlikely to use our products unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our products. While Probuphine was approved by the FDA in late May 2016, the procedure codes (G codes) for insertion only, removal only, and insertion plus removal were approved only in late 2017 and went into effect in January 2018.

In addition, the market for our products may depend on access to third-party payors' drug formularies, or lists of medications for which third-party payors provide coverage and reimbursement. The industry competition to be included in such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug in their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available. Also, regional healthcare authorities and individual hospitals are increasingly using competitive bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This can reduce demand for our products or put pressure on our product pricing, which could negatively affect our business, results of operations, financial condition and prospects.

Further, we believe that future coverage and reimbursement will likely be subject to increased restrictions both in the United States and in international markets. Third-party coverage and reimbursement for Probuphine or any of our product candidates for which we may receive regulatory approval may not be available or adequate in either the United States or international markets, which could have a material adverse effect on our business, results of operations, financial condition and prospects.

Health care reform measures and changes in policies, funding, staffing and leadership at the FDA and other agencies could hinder or prevent the commercial success of our products.

In the United States, there have been a number of legislative and regulatory changes to the healthcare system in ways that could affect our future results of operations and the future results of operations of our potential customers. For example, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 established a new Part D prescription drug benefit, which became effective January 1, 2006. Under the prescription drug benefit, Medicare beneficiaries can obtain prescription drug coverage from private sector plans that are permitted to limit the number of prescription drugs that are covered in each therapeutic category and class on their formularies. If our products are not widely included on the formularies of these plans, our ability to market our products may be adversely affected.

Furthermore, there have been and continue to be a number of initiatives at the federal and state levels that seek to reduce healthcare costs. In March 2010, the Patient Protection and Affordable Health Care Act of 2010, as amended by the Health Care and Education Affordability Reconciliation Act of 2010, or collectively "ACA", was signed into law, which includes measures to significantly change the way health care is financed by both governmental and private insurers.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of up to 2% per fiscal year. On January 2, 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, reduced Medicare payments to several providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These laws may result in additional reductions in Medicare and other health care funding, which could have a material adverse effect on our customers and accordingly, our financial operations.

Additionally, individual states have become increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access, and marketing cost disclosure and transparency measures, and designed to encourage importation from other countries and bulk purchasing. Legally-mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects.

In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This can reduce demand for our products or put pressure on our product pricing, which could negatively affect our business, results of operations, financial condition and prospects.

Additionally, given recent federal and state government initiatives directed at lowering the total cost of healthcare, Congress and state legislatures will likely continue to focus on healthcare reform, the cost of prescription drugs and the reform of the Medicare and Medicaid programs. While we cannot predict the full outcome of any such legislation, it may result in decreased reimbursement for prescription drugs, which may further exacerbate industry-wide pressure to reduce prescription drug prices. This could harm our ability to market our products and generate revenues. In addition, legislation has been introduced in Congress that, if enacted, would permit more widespread importation or re-importation of pharmaceutical products from foreign countries into the United States, including from countries where the products are sold at lower prices than in the United States. Such legislation, or similar regulatory changes, could lead to a decision to decrease our prices to better compete, which, in turn, could adversely affect our business, results of operations, financial condition and prospects. It is also possible that other legislative proposals having similar effects will be adopted.

Furthermore, regulatory authorities' assessment of the data and results required to demonstrate safety and efficacy can change over time and can be affected by many factors, such as the emergence of new information, including on other products, changing policies and agency funding, staffing and leadership. We cannot be sure whether future changes to the regulatory environment will be favorable or unfavorable to our business prospects.

We may not be able to implement our business plan if we are unable to attract and retain key personnel and consultants.

As a company with a limited number of personnel, we are highly dependent on the services of our executive management and scientific staff, in particular Sunil Bhonsle, our President and Chief Executive Officer, Marc Rubin, our Executive Chairman and Katherine DeVarney our Executive Vice President and Chief Scientific Officer. The loss of one or more of such individuals could substantially impair ongoing research and development programs and could hinder our ability to obtain corporate partners.

Our ability to commercialize Probuphine effectively depends in large part upon our ability to attract and retain highly qualified sales, marketing and support personnel. 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 breadth 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 formulating our clinical and commercial strategies. 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.

Risks Related to Our Financial Condition and Need for Additional Capital

We have incurred net losses in almost every year since our inception and we may never achieve or sustain profitability.

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 six months ended June 30, 2018 and 2017, we had net losses of approximately $3.47 million and $6.46 million, respectively, and had net cash used in operating activities of approximately $2.86 million and $5.63 million, respectively. For the year ended December 31, 2017, we had a net losses of approximately $14.31 million and had net cash used in operating activities of approximately $13.04 million. These net losses and negative cash flows have had, and will continue to have, an adverse effect on our stockholders' equity and working capital.

To date, we have devoted most of our financial resources to our corporate overhead and research and development, including our drug discovery research, preclinical development activities and clinical trials. We expect to continue to incur net losses and negative operating cash flow for the foreseeable future, and we expect these losses to increase as we add infrastructure and personnel to support our transition to a commercial enterprise. The amount of future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate significant revenues. There can be no assurance that we will ever achieve profitability.

We will require additional proceeds to fund our operations and to continue as a going concern.

We currently estimate that our available cash at June 30, 2018, together with the approximately $1.1 million received from Molteni in August 2018 and the proceeds of this offering, will be sufficient to fund our Probuphine commercial efforts and Phase IV clinical program through 2019. We will require additional funds to advance our ProNeura development programs during such period and to complete the regulatory approval process necessary to commercialize any products we might develop. While we are currently evaluating the alternatives available to us, including government grants and third-party collaborations for one or more of our ProNeura programs, our efforts to address our liquidity requirements may not be successful. We may also need additional funds to complete the required post-approval clinical trials and there can be no assurance that revenues for operations or any other source of capital will be available to us on acceptable terms. While we expect to have adequate resources in order to operate our business through the next 12 months, our auditors may have doubt about our ability to continue as a going concern in future periods, and our financial statements relating to those periods may not be prepared on a going-concern basis based on any such doubts. In addition, if one or more of the risks discussed in these risk factors occur or our expenses exceed our expectations, we may be required to raise further additional funds sooner than anticipated. The inclusion of a going concern modification in our independent registered public accounting firm's report for the year ended December 31, 2017, or in any future report, may materially and adversely affect our stock price or our ability to raise new capital.

Our need for future financing may result in the issuance of additional securities which will cause investors to experience dilution.

Our cash requirements may vary from those now planned depending upon numerous factors, including the result of future research and development activities. We expect our expenses to increase in connection with our ongoing activities, particularly as we continue the research and development and initiate and conduct clinical trials of, and seek marketing approval for, our product candidates. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. We may seek additional funding through a combination of equity offerings or debt financings. Our securities may be offered to other investors at a price lower than the price per share offered to current stockholders, or upon terms which may be deemed more favorable than those offered to current stockholders. In addition, the issuance of securities in any future financing may dilute an investor's equity ownership and have the effect of depressing the market price for our securities. Moreover, we may issue derivative securities, including options and/or warrants, from time to time, to procure qualified personnel or for other business reasons.

The issuance of any such derivative securities, which is at the discretion of our board of directors, may further dilute the equity ownership of our stockholders. No assurance can be given as to our ability to procure additional financing on terms deemed favorable to us. To the extent additional capital is required and cannot be raised successfully, we may then have to limit our then current operations and/or may have to curtail certain, if not all, of our business objectives and plans.

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, 2017, we had federal net operating loss and tax credit carryforwards of $261.0 million and $8.9 million, respectively, and state net operating loss and tax credit carryforwards of $107.1 million and $8.8 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.

Our loan agreement contains restrictions on our operations and could result in certain adverse results.

Our Amended and Restated Venture Capital and Loan Agreement, or Loan Agreement, with Molteni and Horizon Technology Finance Corporation, or Horizon, contains a variety of affirmative covenants, including, without limitation, payment obligations, information delivery requirements and certain notice requirements. Additionally, we are bound by certain negative covenants setting forth actions that are not permitted to be taken during the term of the Loan Agreement without consent of Molteni, as the majority lender, including, without limitation, incurring certain additional indebtedness, making certain asset dispositions, entering into certain mergers, acquisitions or other business combination transactions or incurring any non-permitted lien or other encumbrance on our assets. Subject to certain forbearance provisions in effect through December 31, 2019, upon the occurrence of an event of default under the Loan Agreement (subject to any applicable cure periods), all amounts owed thereunder would begin to bear interest at a rate that is 5.0% higher than the rate that would otherwise be applicable and the outstanding loan may be declared immediately due and payable. Furthermore, the loan is secured by a perfected security interest in all of our assets, including our Probuphine and ProNeura intellectual property, which could be foreclosed upon in the event of a default that is not waived or cured.

Risks Related to this Offering and our Common Stock

Our share price may be volatile, which could subject us to securities class action litigation and prevent you from being able to sell your shares at or above your purchase price.

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

- results of our clinical trials;
- results of clinical trials of our competitors' products;
- regulatory actions with respect to our products or our competitors' products;
- actual or anticipated fluctuations in our financial condition and operating results;
- actual or anticipated changes in our growth rate relative to our competitors;
- actual or anticipated fluctuations in our competitors' operating results or changes in their growth rate;
- competition from existing products or new products that may emerge;
- 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 management or scientific 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.

Furthermore, 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. In addition, such fluctuations could subject us to securities class action litigation, which could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

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.

There is no active, public market for the warrants or Series A Preferred being offered in this offering.

There is no established public trading market for the warrants or the Series A Preferred being offered in this offering. We do not intend to apply to list the warrants or the Series A Preferred on a securities exchange. Without an active trading market, the liquidity of the warrants and the Series A Preferred will be limited.

Holders of Series A Preferred will have limited voting rights.

Except with respect to certain material changes in the terms of the Series A Preferred and certain other matters and except as may be required by Delaware law, holders of Series A Preferred will have no voting rights. You will have no right to vote for any members of our board of directors.

Holders of the warrants will not have rights of common stockholders until such warrants are exercised.

The warrants being offered do not confer any rights of common stock ownership on their holders, such as voting rights or the right to receive dividends, but rather merely represent the right to acquire shares of common stock at a fixed price for a limited period of time. Specifically, commencing on the date of issuance, holders of the warrants may exercise their right to acquire the common stock and pay the exercise price prior to five years from the date of issuance, after which date any unexercised warrants will expire and have no further value.

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.

Exercise of options or warrants or conversion of convertible securities may have a dilutive effect on your percentage ownership and may result in a dilution of your voting power and an increase in the number of shares of common stock eligible for future resale in the public market, which may negatively impact the trading price of our shares of common stock.

The exercise or conversion of some or all of our outstanding options, warrants, or convertible securities could result in significant dilution in the percentage ownership interest of investors in this offering and in the percentage ownership interest of our existing common stockholders and in a significant dilution of voting rights and earnings per share.

As of September 10, 2018, we had outstanding warrants to purchase up to 1,708,181 shares of our common stock at a weighted exercise price of $2.37 per share and outstanding and options outstanding under our stock incentive plans to purchase up to 3,498,650 shares of our common stock at a weighted average exercise price of $3.39 per share. At such date there was also an aggregate of $2.4 million principal amount of outstanding indebtedness that is convertible into 2,000,000 shares of our common stock. To the extent options and/or warrants and/or conversion rights are exercised (including with respect to the warrants and any Series A Preferred issued in this offering), additional shares of common stock will be issued, and such issuance will dilute stockholders.

Investors in this offering will experience immediate and substantial dilution in net tangible book value.

The public offering price per share of common stock in this offering will be substantially higher than the net tangible book value per share of our outstanding shares of common stock. Accordingly, investors in this offering will pay a price per share that substantially exceeds the net tangible book value per share of our common stock. Based on an at an assumed public offering price of $0.67 per Class A Unit and $1,000 per Class B Unit, investors in this offering will incur immediate dilution of $0.39 per share. See “Dilution” for a more complete description of how the value of your investment will be diluted upon the completion of this offering.

We may seek to raise additional funds, 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 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.

Our management will have broad discretion over the use of proceeds from this offering and may not use the proceeds effectively.

Our management will have broad discretion over the use of proceeds from this offering. The net proceeds from this offering will be used for our operations and for other general corporate purposes, including, but not limited to, building our infrastructure, including a small sales and marketing team, to commercialize Probuphine, conduct of the Phase IV trials required by the FDA, our internal research and development programs and general working capital. Our management will have considerable discretion in the application of the net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. The net proceeds may be used for corporate purposes that do not improve our operating results or enhance the value of our common stock.

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

On April 9, 2018, we received a notice from Nasdaq that because our stockholders' equity is less than $2,500,000, we are no longer in compliance with the minimum stockholders' equity requirement for continued listing pursuant to Nasdaq Listing Rule 5550(b)(1). Following our submission of a plan of compliance, we were granted an extension of 180 calendar days, or until October 8, 2018, to regain compliance. At June 30, 2018, we had a stockholders' deficit of approximately 1.3 million. The proceeds of this offering, together with the proceeds from Molteni in August 2018, pursuant to the Purchase Agreement will enable us to achieve the minimum stockholders' equity requirement.

If we fail to satisfy the continued listing requirements of Nasdaq, such stockholders' equity requirement or the minimum closing bid price requirement, Nasdaq may take steps to de-list our common stock. Such a de-listing would likely have a negative effect on the price of our common stock and would impair your ability to sell or purchase our common stock when you wish to do so. In the event of a de-listing, we would take actions to restore our compliance with Nasdaq's listing requirements, but we can provide no assurance that any such action taken by us would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Nasdaq minimum bid price requirement or prevent future non-compliance with Nasdaq's listing requirements.

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 amended and restated certificate of incorporation and our amended and restated 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.

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

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.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference in this prospectus contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Exchange Act. All statements other than statements of historical facts contained or incorporated by reference in this prospectus, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

The words "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about:

- our ability to implement our business plan;
- our ability to raise additional capital to meet our liquidity needs;
- our ability to generate sufficient proceeds from this offering;
- our ability to generate product revenues;
- our ability to achieve profitability;
- our ability to satisfy U.S. (including the FDA), and international regulatory requirements;
- our ability to obtain market acceptance of our technology and products;
- our ability to compete in the market;
- our ability to advance our clinical trials;
- our ability to fund, design and implement clinical trials;
- our ability to demonstrate that our product candidates are safe for human use and effective for indicated uses;
- our ability to gain acceptance of physicians and patients for use of our products;
- our dependency on third-party researchers and manufacturers and licensors;
- our ability to effectively implement cost-cutting measures;
- our ability to establish and maintain strategic partnerships, including for the distribution of products;
- our ability to attract and retain sufficient, qualified personnel;
- our ability to obtain or maintain patents or other appropriate protection for the intellectual property;
- our dependency on the intellectual property licensed to us or possessed by third parties;
- our ability to adequately support future growth;
- our ability to maintain our Nasdaq listing; and
- potential product liability or intellectual property infringement claims.

These forward-looking statements are only predictions and we may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, so you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have based these forward-looking statements largely on our current expectations and projections about future events and

trends that we believe may affect our business, financial condition and operating results. We have included important factors in the cautionary statements included in this prospectus, and in the documents incorporated by reference, particularly in the 'Risk Factors' section, that could cause actual future results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

The forward-looking statements included in this prospectus, and documents incorporated by reference in this prospectus, represent our views as of the date of this prospectus. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

This prospectus contains estimates made, and other statistical data published, by independent parties and by us relating to market size and growth and other data about our industry. We obtained the industry and market data in this prospectus from our own research as well as from industry and general publications, surveys and studies conducted by third parties. This data involves a number of assumptions and limitations and contains projections and estimates of the future performance of the industries in which we operate that are subject to a high degree of uncertainty. We caution you not to give undue weight to such projections, assumptions and estimates.

USE OF PROCEEDS

We estimate that the net proceeds from sale of Units offered by us will be approximately $13.6 million, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and assuming a public offering price of $0.67 per Class A Unit and $1,000 per Class B Unit. If the underwriters' option to purchase additional securities is exercised in full, we estimate that our net proceeds will be approximately $15.7 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, and assuming a public offering price of $0.67 per Class A Unit and $1,000 per Class B Unit.

We anticipate that we will use the net proceeds from this offering for our operations and for other general corporate purposes, including, but not limited to, building our infrastructure, including a small sales and marketing team, to commercialize Probuphine, conduct of the Phase IV trials required by the FDA and general working capital.

This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment grade, interest bearing instruments and U.S. government securities.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization, as of June 30, 2018:

- on an actual basis; and
- on an as adjusted basis after giving effect to the sale of 3,358,209 Class A Units, at the assumed public offering price of $0.67 per Class A Unit and 12,750 Class B Units, at the public offering price of $1,000 per Class B Unit, after deducting underwriting discounts and commissions and other estimated offering expenses payable by us.

You should consider this table in conjunction with "Use of Proceeds," "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this prospectus and our financial statements and unaudited as adjusted financial information and related notes thereto, which are incorporated by reference in this prospectus.

	As of June 30, 2018 (unaudited)	
	Actual	As Adjusted
Cash and cash equivalents	$ 1,613,564	$ 15,223,564
Total liabilities	$ 5,930,277	$ 5,930,277
Total stockholders' equity:		
Preferred stock, $0.001 par value; 5,000,000 shares authorized, 0 shares issued and outstanding, actual; 12,750 shares issued and outstanding, as adjusted	—	13
Common Stock, $0.001 par value, 125,000,000 shares authorized, 21,203,744 shares issued and outstanding, actual; 24,561,953 shares issued and outstanding, as adjusted	21,204	24,562
Additional paid in capital	325,411,154	339,017,783
Accumulated deficit	(326,745,543)	(326,745,543)
Total stockholders' equity	(1,313,185)	12,296,815

The number of shares of our common stock that will be outstanding immediately after this offering is based on 21,203,744 shares of common stock outstanding as of June 30, 2018, and excludes as of such date:

- 3,647,863 shares of common stock issuable upon exercise of outstanding options, at a weighted average exercise price of $3.42 per share, of which 2,795,862 shares are vested as of such date;
- 46,000 shares of common stock reserved for future issuance under the 2015 Plan;
- 1,708,181 shares of common stock issuable upon exercise of warrants at a weighted average exercise price of $2.37;
- 2,000,000 shares of common stock issuable upon conversion of $2.4 million principal amount of outstanding indebtedness;
- shares of our common stock issuable upon exercise of the warrants to be issued in this offering; and
- shares of our common stock issuable upon conversion of the Series A Preferred to be issued in this offering.

The number of shares of our common stock outstanding after this offering will fluctuate depending on how many Class B Units are sold in this offering and whether and to what extent holders of Series A Preferred shares convert their shares to common stock.

To the extent we sell any Class B Units in this offering, the same aggregate number of common stock equivalents resulting from this offering would be convertible under the Series A Preferred issued as part of the Class B Units.

The foregoing information assumes no exercise by the underwriters of their option to purchase additional securities and excludes shares of our common stock issuable upon exercise of the representative's warrants (4% of the shares of common stock sold in this offering, including shares issuable upon conversion of the Series B Preferred but excluding any securities sold upon exercise of the underwriter's option to purchase additional securities or shares issuable upon exercise of the warrants).

DILUTION

If you purchase shares of our securities in this offering, you will experience dilution to the extent of the difference between the public offering price per share in this offering and our as adjusted net tangible book value per share immediately after this offering. Net tangible book value per share is equal to the amount of our total tangible assets, less total liabilities, divided by the number of outstanding shares of our common stock. As of June 30, 2018, our net tangible book value was approximately $(1,313,185), or approximately $(0.06) per share.

After giving effect to the assumed sale by us of 22,388,060 shares of our common stock in this offering at a public offering price of $0.67 per share (which was the last reported sale price of our common stock on the Nasdaq Capital Market on September 10, 2018), and the accompanying common warrants at a purchase price of $0.01 per common warrant and assuming no sale of any Series A Preferred shares in this offering and excluding the proceeds, if any, from the exercise of the common warrants and after deducting the estimated underwriting discount and estimated offering expenses payable by us, our pro forma net tangible book value as of June 30, 2018 would have been approximately $12.3 million, or approximately $0.28 per share. This represents an immediate increase in pro forma net tangible book value of $0.34 per share to existing stockholders and an immediate dilution of $0.39 per share to new investors purchasing securities in this offering. The following table illustrates this per share dilution:

Assumed public offering price per share of common stock		$ 0.67
Historical net tangible book value per share as of June 30, 2018	$ (0.06)	
Increase in pro forma net tangible book value per share after this offering	$ 0.34	
Pro forma net tangible book value per share after giving effect to this offering		0.28
Dilution per share to new investors		$(0.39)

The information above and below assumes that no Series A Preferred shares are issued in this offering. The information above assumes that the underwriters do not exercise their over-allotment option. If the underwriters exercise their over-allotment option in full, the pro forma net tangible book value will increase to $0.31 per share, representing an immediate increase to existing stockholders of $0.37 per share and an immediate dilution of $0.36 per share to new investors.

A $0.25 increase (decrease) in the assumed public offering price of $0.67 per share would result in an incremental increase (decrease) in our pro forma net tangible book value of approximately $5.2 million or approximately $0.12 per share, and would result in an incremental increase (decrease) in the dilution to new investors of approximately $0.13 per share, assuming that the number of shares of our common stock sold by us remains the same and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. A $0.50 increase (decrease) in the assumed public offering price of $0.67 per share would result in an incremental increase (decrease) in our pro forma net tangible book value of approximately $10.4 million or approximately $0.24 per share, and would result in an incremental increase (decrease) in the dilution to new investors of approximately $0.26 per share, assuming that the number of shares of our common stock sold by us remains the same and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

We may also increase or decrease the number of shares of common stock we are offering from the assumed number of shares of common stock set forth above. An increase (decrease) of 250,000 in the assumed number of shares of common stock sold by us in this offering would result in an incremental increase (decrease) in our pro forma net tangible book value of approximately $0.2 million or approximately $0.002 per share, and would result in an incremental increase (decrease) in the dilution to new investors of approximately $0.002 per share, assuming that the assumed public offering price of the common stock remains the same and after deducting the estimated underwriting discount and estimated offering expenses payable by us. An increase (decrease) of 500,000 in the assumed number of shares of common stock sold by us in this offering would result in an incremental increase (decrease) in our pro forma net tangible book value of approximately $0.3 million or approximately $0.004 per share and would result in an incremental increase (decrease) in the dilution to new investors of approximately $0.004 per share, assuming that the assumed public offering price of the common stock remains the same and after deducting the estimated

underwriting discount and estimated offering expenses payable by us. The information discussed above is illustrative only and will adjust based on the actual public offering price, the actual number of securities in this offering and other terms of this offering determined at pricing. The information discussed above is illustrative only and will adjust based on the actual public offering price, the actual number of securities in this offering and other terms of this offering determined at pricing.

The foregoing discussion and table do not take into account further dilution to new investors that could occur upon the exercise of outstanding options or warrants and the common warrants offered hereby. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

MARKET FOR COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Our common stock has been listed on The Nasdaq Capital Market since October 2015. The following table sets forth, for the periods indicated, our high and low sales prices on The Nasdaq Capital Market.

	High	Low
2018		
First Quarter	$1.45	$0.94
Second Quarter	$1.15	$0.60
Third Quarter (through September 10, 2018)	$1.10	$0.65
2017		
First Quarter	$4.80	$3.15
Second Quarter	$3.40	$1.80
Third Quarter	$2.15	$1.20
Fourth Quarter	$2.85	$1.13
2016		
First Quarter	$4.91	$2.98
Second Quarter	$7.41	$4.76
Third Quarter	$6.17	$4.80
Fourth Quarter	$6.10	$3.80

Holders

As of September 10, 2018, we had 119 registered holders of record of our common stock. A substantially greater number of holders of our common stock are “street name” or beneficial holders, whose shares of record are held by banks, brokers, other financial institutions, and registered clearing agencies.

Dividend Policy

We do not anticipate paying dividends on our common stock. We currently intend to retain all of our future earnings, as applicable, to finance the growth and development of our business. Our Loan Agreement prohibits the payment of dividends while the debt remains outstanding. Any future determination as to the payment of cash dividends on our common stock, if otherwise permissible at the time, will be at our board of directors’ discretion and will depend on our financial condition, operating results, capital requirements and other factors that our board of directors considers to be relevant.

BUSINESS

The following information relates primarily to our Probuphine business, activities and prospects. For additional information regarding our business, we refer you to the documents that are incorporated by reference herein. See "Incorporation Of Certain Documents By Reference."

Overview

We are a pharmaceutical company developing proprietary 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 provides an efficacy and/or safety benefit. We are currently transitioning to a commercial stage enterprise having recently re-acquired Probuphine, a product approved in the U.S. for management of opiate dependence. ProNeura is a continuous drug delivery system consisting of a small, solid rod made from a mixture of ethylene-vinyl acetate, or EVA, and a drug substance. The resulting product is a solid matrix that is placed subdermally, normally in the inside part of the upper arm in a simple physician office based procedure, 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 resulting in a steady rate of release generally similar to intravenous administration avoiding the fluctuating peak and trough levels of oral dosing that pose problems in many disease settings.

Probuphine

Overview

Probuphine, our first marketed product based on our ProNeura drug delivery technology, is a six-month buprenorphine implant for the maintenance treatment of opioid addiction in patients who have achieved and sustained prolonged clinical stability on a dose of up to 8 mg per day of oral buprenorphine, which represents approximately twenty-five percent of oral buprenorphine prescriptions. Treatment with Probuphine requires a healthcare provider to be trained and certified under the Probuphine REMS program to insert a set of four implants, each smaller than a one-inch matchstick, sub-dermally in the patient's upper arm under local anesthetic during a short in-office procedure lasting about 15 minutes. After insertion, Probuphine delivers buprenorphine continuously for six months. Thereafter, the implants are removed and can be replaced with a new set of implants in the opposite arm.

The development and commercialization rights to Probuphine for the U.S. and Canada were licensed to Braeburn in December 2012 and following FDA approval in May 2016, Braeburn commenced a full commercial launch during the first quarter of 2017. Progress was slow and we received royalty revenues of only $215,000 for the year ended December 31, 2017. In early 2018, Braeburn substantially reduced its field sales force and medical liaison personnel following its receipt of a complete response letter from the FDA for its weekly and monthly depot injection products. Anticipating a negative impact on Probuphine sales in the U.S., we began discussing with Braeburn terms for the return of the Probuphine U.S. commercialization rights to Titan and on May 25, 2018, we entered into an agreement under which we received a $1 million payment from Braeburn and Braeburn's undertaking to provided transition services through 2018.

Based on feedback from key opinion leaders, we believe that access to care for patients with Probuphine has been negatively impacted by issues related to the complexity, timing and amount of reimbursement to patients and their doctors from insurance providers, as well as the requirements of the REMS program. Although the opioid addiction epidemic continues to be a major concern for our country, the hurdles to penetrating the market and growing sales of Probuphine have been considerable. We believe that a more focused commercialization strategy is necessary for success. These include re-segmenting target customer markets and focusing on high Probuphine-prescribing physicians with long-term recovery oriented treatment programs, residential treatment facilities that utilize MAT, academic institutions with addiction residency and fellowships programs, and the criminal justice system. We also plan to expand the specialty pharmacy network in order to better utilize the third party payor system. Additionally, we believe Probuphine can benefit from the trend of opioid addiction treatment's move towards extended release formulations, such as one month depot injections, the first of which was approved by the FDA at the end of 2017. These products will enable clinicians and patients to become accustomed to longer duration procedure-oriented treatment, which may encourage the potential use of Probuphine during the maintenance treatment stage.

In March 2017, we received confirmation from the EMA that Probuphine is eligible for a centralized review and approval process. While the preparation of the MAA was in progress, we met with the review teams of the two EMA member countries appointed as rapporteur (Ireland) and co-rapporteur (United Kingdom) to familiarize them with the development of Probuphine and the safety and efficacy data set, as well as receive their advice on the MAA preparation and presentation. The MAA was submitted to the EMA on November 6, 2017. We were also granted Small Manufacturing Entity, or SME, status in Europe, which provides for some monetary benefits during the application process and commercialization. On March 21, 2018, we entered into the Purchase Agreement pursuant to which Molteni acquired the European intellectual property related to Probuphine, including the MAA, and will have the exclusive right to commercialize the Titan supplied Probuphine product in Europe, as well as certain countries of the Commonwealth of Independent States, the Middle East and North Africa. We have continued to assist Molteni in the MAA review process and during the second quarter we had meetings with the rapporteur and co-rapporteur regulatory review teams to present our strategy to address specific questions asked by these regulatory agencies as part of the review process. Together with Molteni, we are now preparing the full response to all questions that were asked, and we expect to submit these to the EMA no later than mid-September 2018. Based on the overall review process timeline the final recommendation and potential approval would occur during the first half of 2019.

Agreements

Braeburn

In December 2012, we entered into a license agreement, or the Braeburn Agreement with Braeburn pursuant to which we granted Braeburn an exclusive right and license to commercialize Probuphine in the United States of America and its territories, including Puerto Rico, and Canada. Under the Braeburn Agreement, as subsequently amended, Braeburn made a non-refundable up-front license fee payment of $15.75 million in 2012 and a milestone payment of $15 million upon FDA approval of the NDA in May 2016. The agreement also entitled us to royalties on net sales of Probuphine ranging in percentage from the mid-teens to the low twenties. In February 2016, Braeburn entered into a Distribution and Sublicense Agreement, or the Knight Agreement, with Knight Therapeutics Inc., or Knight, in which it appointed Knight as the exclusive distributor of Probuphine in Canada and granted Knight an exclusive license to commercialize Probuphine in Canada.

On May 25, 2018, we entered into a Termination and Transition Services Agreement, or the Transition Agreement, with Braeburn pursuant to which we regained all rights to the commercialization and clinical development of Probuphine granted under the Braeburn Agreement and Braeburn agreed to provide assistance to Titan through December 28, 2018 to help ensure that patients and their doctors continue to have support and access to this treatment. As part of the Transition Agreement, we assumed a significant number of Braeburn's commercial contracts relating to the commercialization of Probuphine, including the Knight Agreement.

Knight

Under the Knight Agreement, as amended in August 2018, we granted Knight an exclusive license to commercialize Probuphine in Canada as well as a right of first negotiation in the event we intend to license our right to commercialize any of our other products in Canada. During the term of the Knight Agreement, we may not commercialize any product containing buprenorphine that is intended for a treatment duration of six months or more in Canada.

Pursuant to the Knight Agreement, Knight must use commercially reasonable efforts to commercialize Probuphine 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 will be the exclusive supplier of Probuphine to Knight subject to a supply agreement between us and Knight.

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 is expected to occur 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.

Molteni

On March 21, 2018, we entered into an Asset Purchase, Supply and Support Agreement with Molteni that was subsequently amended on August 3, 2018, or the Purchase Agreement, pursuant to which Molteni acquired the European intellectual property related to Probuphine, including the MAA under review by the EMA, and will have the exclusive right to commercialize the Titan supplied Probuphine product in Europe, as well as certain countries of the Commonwealth of Independent States, the Middle East and North Africa, or the Molteni Territory. We received an initial payment of €2.0 million ($2,448,000) for the purchased assets and an additional payment of €950,000 ($1,107,000) upon execution of the amendment. We will receive the following additional potential payments totaling up to €2.5 million (approximately $2,850,000) upon the achievement of certain regulatory and product label milestones, including: an aggregate of €1.0 million of milestone payments upon approval of the product reimbursement price in certain key countries, provided that the payments, which are subject to a 50% reduction if the EMA marketing authorization is not received on or prior to September 30, 2019, shall not be payable in the event such authorization is not received on or prior to March 31, 2020. Additionally, Titan is entitled to receive earn-out payments for up to 15 years on net sales of Probuphine in the Molteni Territory ranging in percentage from the low-teens to the mid-twenties.

The Purchase Agreement provides that Titan will supply Molteni with semi-finished product (i.e., the implant and the applicator) on an exclusive basis at a fixed price through December 31, 2019, with subsequent price increases not to exceed annual cost increases to Titan under its current manufacturing agreement and for the purchase of the active pharmaceutical ingredient.

Molteni will be prohibited from marketing a Competitor Product (as defined in the Purchase Agreement) in the Territory for the five year period following approval of the MAA. Thereafter, Molteni will be required to pay Titan a low single digit royalty on net sales by Molteni of any Competitor Product.

On March 21, 2018, we entered into the Loan Agreement, which amended and restated our prior loan agreement with Horizon. Under the Loan Agreement, Horizon assigned $2,400,000 of the $4,000,000 outstanding principal balance of the loan to Molteni and Molteni was appointed collateral agent and assumed majority and administrative control of the debt. Molteni has the right to convert its portion of the debt into shares of our common stock at a conversion price of $1.20 per share and is required to effect this conversion of debt to equity if we complete an equity financing resulting in gross proceeds of at least $10,000,000 at a price per share of common stock in excess of $1.20 and repay the $1,600,000 principal balance of Horizon's loan amount.

In consideration of Molteni's entry into the Purchase Agreement and the Loan Agreement, on March 21, 2018, we entered into an agreement with Molteni. or the Rights Agreement, pursuant to which, as amended, we agreed to (i) issue Molteni seven-year warrants to purchase 540,000 shares of our common stock at an exercise price of $1.20 per share, (ii) provide Molteni customary demand and piggy-back

registration rights with respect to the shares of common stock issuable upon conversion of its loan and exercise of its warrants, (iii) appoint one member of Titan's board of directors if Mr. Seghi Recli is not then serving on the board and (iv) provide board observer rights to Molteni if it has not designated a board nominee as well as certain information rights. The board designation, observer and information rights will terminate at such time as Molteni ceases to beneficially own at least one percent of our outstanding capital stock (inclusive of the shares issuable upon conversion of its note and exercise of its warrants).

In connection with the August 2018 amendment to the Purchase Agreement, Molteni committed to make a convertible loan to us of €550,000 (approximately $642,000) provided we have submitted the response to the 120-day letter from EMA on or prior to September 14, 2018 in accordance with the amendment. The convertible loan, if made, will convert automatically into shares of our common stock upon the issuance by the EMA of marketing approval for Probuphine at a conversion price per share equal to the lower of (i) the closing price on the loan funding date and (ii) the closing price on the conversion date. In the event the EMA has not granted marketing approval by December 31, 2019, the loan will become due and payable, together with accrued interest at the rate of one-month LIBOR (to the extent in excess of 1.10%) plus 9.50% per annum.

Sales and Marketing; Strategy for Probuphine Relaunch

Prior to Titan's reacquisition of Probuphine commercialization rights in May 2018, Braeburn had sole responsibility for sales and marketing of Probuphine within the United States and, through Knight, in Canada. Since reacquiring our rights, we have relied on Braeburn and a team of marketing, regulatory and addiction consultants to assist us as we transition to a commercial entity. We intend to allocate proceeds of this offering to build a small sales and marketing team of no more than 10 full time employees with experience in product marketing and supply chain logistics, medical liaison and training functions, third party payer medical access and field sales. This team will focus initially on four key market segments.

We believe that patient access to Probuphine has been negatively impacted by issues related to the complexity, timing and amount of reimbursement to patients and their doctors from insurance providers, as well as the requirements of the REMS program. See "REMS Program" below. We also believe that the broad marketing strategy that was initially undertaken reflected an incomplete understanding of the market and did not provide the requisite systems to support the reimbursement process and patient and physician education.

Our market strategy for the relaunch of Probuphine targets four market segments:

High Probuphine-prescribing physicians with long-term recovery oriented treatment programs

While there are currently approximately 52,000 buprenorphine certified healthcare providers in the U.S., approximately 90% of prescriptions for treating the 600,000 – 700,000 patients treated with oral buprenorphine are written by approximately 6,000 providers. Moreover, while over 2,500 healthcare providers are trained and certified to administer Probuphine, to date less than 200 have prescribed the treatment.

Our plan is to initially focus on the top tier of prescribers to facilitate the growth of their businesses through increased utilization of Probuphine. Utilizing some of the top tier providers, we will establish centers of excellence that will provide sites for referrals from other health care providers. In addition, our medical access specialists will provide resources to help lessen the complexity of the supply chain and reimbursement process. In the longer term, some top tier Probuphine providers will also engage in investigator sponsored research which can generate new and clinically meaningful data, some of which will help us assess the potential for label expansion. We will also seek to partner with buprenorphine advocacy groups that can facilitate patient-healthcare provider location matching and broaden patient outreach.

Residential Treatment Facilities

There are currently numerous residential addiction treatment facilities in the U.S. reflecting a large potential patient population who can benefit from Probuphine. These facilities have mostly relied on 12 step programs with the goal of complete and sustained abstinence while avoiding any MAT. However, the success of such programs has not withstood scrutiny, as it has been increasingly recognized that a very

high percentage patients with opiate addiction ultimately relapse. Consequently, the use of MAT as part of the management of OUD has been increasing, and is expected to rise substantially in the near term. Our plan is to establish alliances with a few large programs.

Academic institutions with addiction treatment and training programs

There are an increasing number of academic addiction medicine training programs that treat OUD patients. We plan to form alliances with institutions that already have the necessary trained personnel and equipment for doing small procedures, and facilitate the introduction and/or increased use of Probuphine for appropriate patients. This will also serve to introduce Probuphine to the next generation of addiction specialists. In the longer term, we expect that KOLs at some of these sites will initiate investigator sponsored studies which can generate clinically meaningful data while helping us assess the potential for label expansion.

Criminal Justice System

It is estimated that of the 2.3 million people currently confined in U.S. correctional facilities, approximately 25% suffer from OUD. Currently, less than 1% of U.S. prisons and jails allow access to medication for OUD due largely to the risk of misuse and diversion of sublingual formulations (pills, film), However, new research published by JAMA Psychiatry has demonstrated benefits of buprenorphine during incarceration and upon release. In Rhode Island, a recent study found that opioid overdose deaths dropped by nearly 2/3 when MAT was provided to all state inmates. A few criminal justice programs have begun to utilize medications in order to address jail overcrowding and recidivism related to OUD.

Our goal is to initially establish pilot projects with a few select criminal justice programs, with the goal of generating meaningful data that potentially supports the use of Probphine in this setting. The first pilot program will be conducted within the Nevada criminal justice system.

REMS Program

As a condition to the FDA's approval of Probuphine, we were required to maintain the Probuphine REMS program, to mitigate the risk of complications of migration, protrusion, expulsion and nerve damage potentially associated with the improper insertion and removal of Probuphine, and the risks of accidental overdose, misuse and abuse. The REMS requires training for healthcare providers who prescribe and insert Probuphine implants and patient counseling, and Probuphine distribution is restricted to those healthcare providers who have completed training and received certification under the Probuphine REMS. Accordingly, our sales and marketing team will include trained clinical educators who will be responsible for training, certification and on-going in-market technical support to assist doctors in developing expertise with the Probuphine insertion and removal procedures. The field force will also need to work closely with the reimbursement support personnel to help ensure that all information required to place Probuphine orders and to complete benefits investigations is provided on a timely basis.

Manufacturing

The manufacturing of Probuphine has primarily been conducted at DPT Laboratories, Inc., or DPT. We have entered into a commercial manufacturing agreement with DPT that governs the terms of the production and supply of Probuphine. Pursuant to the Purchase Agreement, we are responsible for the manufacture and supply of Probuphine as needed for the Molteni Territory.

To date, we have obtained the supply of bupenorphine from Teva Pharmaceuticals, Inc. under a commercial supply agreement similar to the one with DPT.

Intellectual Property

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 June 2024. A U.S. continuation application is currently

pending which includes claims related to Probuphine for the treatment of pain. Related patents covering use of Probuphine with the continuous delivery technology for the treatment of opiate addiction have also been issued in Australia, Canada, Europe, India, Japan, Mexico and New Zealand. A further Probuphine application is pending in Hong Kong. On February 28, 2018, the European Patent Office issued us a patent covering composition for use claims for treating opioid dependence with a subdermal implant containing buprenorphine through June 2023. On March 21, 2018 we executed the Purchase Agreement with Molteni whereby the European intellectual property covering Probuphine, including the European patent, was acquired by Molteni.

Competition

The pharmaceutical and biotechnology industries are characterized by rapidly evolving technology and intense competition. Many companies of all sizes, including major pharmaceutical companies and specialized biotechnology companies, are engaged in the development and commercialization of therapeutic agents designed for the treatment of the same diseases and disorders that we target. Many of our competitors have substantially greater financial and other resources, larger research and development staff and more experience in the regulatory approval process. Moreover, potential competitors have or may have patents or other rights that conflict with patents covering our technologies.

With respect to Probuphine, there are no six-month implant formulations of buprenorphine on the market or in development, and the primary competition it faces comes from Indivior, PLC (formerly the pharmaceutical business of Reckitt Benckiser Group, PLC), which markets globally a sublingual buprenorphine product (tablet and film formulations trade name Subutex and Suboxone) for the treatment of opioid dependence that currently holds the dominant market share of global sales, and recently received FDA approval for a one month depot injection (tradename Sublocade) that became commercially available in the first quarter of 2018. Probuphine also faces competition from two additional proprietary daily dose formulations that have been approved by the FDA; the first is a sublingual tablet called Zubsolv marketed by Orexo and the second is a buccal patch called Bunavail marketed by Bio Delivery Sciences International. Also, during 2013 and 2014, several generic sublingual tablet formulations of buprenorphine similar to Suboxone and Subutex were approved by the FDA that are expected to compete in the opioid addiction treatment market. Other forms of buprenorphine are also in development by other companies, including intramuscular and intradermal one week and one month depot injections which, if approved, will also compete with our product. Braeburn has licensed rights to certain of such potential products and Titan is entitled to a low single digit royalty on net sales of competing products, if commercialized. However, Braeburn received a complete response letter, or CRL, to the depot formulations of buprenorphine (Camurus 2038) and the approval is likely delayed by several months. Alkermes, Inc. also markets Vivitrol®, a one-month depot injection of naltrexone as a maintenance treatment for opioid dependent patients who have successfully gone through a detoxification process and achieved abstinence.

Regulatory Matters

FDA

As a condition of the marketing approval for Probuphine, the FDA is requiring the conduct of three post-approval Phase IV clinical trials to assess potential safety risks associated with the insertion and removal of Probuphine, potential prolongation of the QT interval and to assess the potential for repeat administration of Probuphine into the same insertion site or insertion into an alternate site. The FDA established a schedule for carrying out the required studies. Prior to our reacquisition of Probuphine rights in May 2018, Braeburn had been in negotiations with the FDA regarding various design and protocol matters but had never commenced any of the mandated trials. We have begun interactions with the FDA regarding the timing, study design and conduct of the Phase IV trials and will allocate a portion of the proceeds of this offering to initiate such trials.

We will also request a meeting with FDA with the ultimate goal of exploring the potential for future expansion of the product label to cover a broader group of OUD patients and the possible pathways to accomplish that.

European Medicines Agency

In early March 2017, we received confirmation from the EMA that Probuphine is eligible for a centralized review and approval process. We were also granted Small Manufacturing Entity, or SME, status in Europe, which provides for some monetary benefits during the application process and commercialization. While the preparation of the MAA was in progress, we met with the review teams of the two EMA member countries appointed as rapporteur (Ireland) and co-rapporteur (United Kingdom) to familiarize them with the development of Probuphine and the safety and efficacy data set, as well as receive their advice on the MAA preparation and presentation. The MAA was submitted to the EMA on November 6, 2017.

In connection with the Purchase Agreement, all rights in the MAA were sold to Molteni and since then we have been working collaboratively with Molteni on the EMA regulatory approval process. On March 22, 2018, the EMA delivered its "120 Day Consolidated List of Questions" which addressed clinical, manufacturing and quality control areas. We have met with the rapporteur and co-rapporteur regulatory review teams to review key questions and provide our planned responses, and we have received constructive guidance from these teams.. We expect to submit, on behalf of Molteni, the response to the EMA's questions in mid-September.

Health Canada

In April 2018, Knight announced that it had received regulatory approval from Health Canada to commercialize Probuphine in Canada.

Additional Products in Development

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, potentially can 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 to date with Probuphine, and the development and regulatory process have been affirmed by the FDA approval of this product. We have been evaluating opportunities to develop this drug delivery platform for other potential treatment applications in which conventional treatment is limited by variability in blood drug levels and poor patient compliance and where existing therapeutic compounds have sufficient potency to be effective at low doses.

ProNeura-Ropinirole for Parkinson's Disease

Parkinson's disease, or PD, is a disease of the central nervous system characterized by the loss of dopaminergic neurons, which leads to increasing activity in the brain region that influences movement and motor function. According to the Parkinson's Disease Foundation, approximately one million people in the U.S. suffer from PD, and this number is projected to double by 2030. Early stage PD patients are treated with daily doses of drugs designed to replace dopamine in the brain. However, these therapeutics typically lose their benefits after several years of chronic treatment, and trigger serious side effect. Many treated patients develop motor response fluctuations and/or drug-induced dyskinesias within only three to five years of treatment, and these symptoms are present in most patients after 10 to 12 years. Clinical and nonclinical research indicates that these motor side effects arise from the pulsatile dopaminergic stimulation resulting from current oral treatment. Continuous dopaminergic stimulation, or CDS, by subcutaneous infusion has been shown to palliate these motor complications, as well as to delay or prevent the onset of dyskinesias. We believe our ProNeura drug delivery technology provides a clinically-validated platform to safely and conveniently provide CDS for several months from a single treatment. Further, the subdermal placement of these implants eliminates many of the device-related complications associated with existing treatment modalities.

Based on these principles we designed an implant to deliver the drug ropinirole and conducted appropriate non-clinical studies, including a non-clinical study in an MPTP Parkinsonian primate model and demonstrated that a sustained non-fluctuating plasma level of ropinirole could be delivered safely for several months following implantation and could control PD symptoms without triggering dyskinesias in

severely lesioned primates. Following further optimization of the implant and completion of the IND enabling non-clinical studies, we submitted the IND application to the FDA in early 2017 and it was cleared in August 2017 for commencement of the proposed Phase 1/2 clinical study. The trial is an open-label, sequential, dose escalation study that will enroll approximately 20 subjects with idiopathic Parkinson's disease. The primary objectives are to characterize the pharmacokinetic profile of the ropinirole implants, to evaluate their safety and tolerability, and to explore potential signals of efficacy using established disease-specific assessment scales. The first patient was treated in October 2017 and initial data from the early patients in the study was obtained in early 2018. In July 2018, we announced that the independent Data Safety Monitoring Board had completed a review of the data from the first cohort of patients and recommended that the trial continue with enrollment of the second cohort of patients. However, due to limited resources and our need to focus on our Probuphine relaunch, we decided to temporarily postpone patient enrollment until such time, if ever, as resources allow.

Other Feasibility Programs

Our goal is to expand our product pipeline using the ProNeura implant platform, and we have been opportunistically evaluating other drugs and disease settings for use with the ProNeura platform in potential treatment applications where conventional treatment is limited by variability in blood drug levels and poor patient compliance.

We have conducted a feasibility assessment of a subcutaneous implant using our proprietary ProNeura sustained release technology to administer an opioid antagonist. A product that may deliver non-fluctuating, therapeutic levels of an opioid antagonist continuously for up to six months may be ideally suited for the prevention of opioid relapse and overdose. On September 6, 2018, we were awarded a grant by the National Institutes of Health National Institute for Drug Addiction in support of this program. The grant provides for approximately $2.67 million in funding during the first year and $4.05 million during the second year subject to the terms and conditions specified in the grant, including our fund matching obligation in the amount of approximately $1.33 million during the first year and $2.03 million during the second year. Funding during the second year is also subject to satisfactory progress of the project and the availability of funds.

We are collaborating with the Walter Reed Army Institute of Research, or WRAIR, and the Southwest Research Institute in the early non-clinical evaluation of the ProNeura platform in malaria prophylaxis. The early data from this collaboration is encouraging and has been presented by the WRAIR staff at several conferences, and WRAIR is now seeking additional funding from the Department of Defense to continue the program with additional non-clinical testing of the implant formulations in large animal studies.

Early non-clinical testing is being conducted for the development of a kappa opioid receptor agonist implant for the treatment of chronic pain. If successfully developed and approved, this would offer a potential non-addictive opioid analgesic for the treatment of chronic pain. Formulation studies and early in vitro testing is being conducted for the potential development of an implant with a currently approved peptide for the treatment of adult type 2 diabetes mellitus. Also, in 2017 we completed early non-clinical development focused on formulation optimization of an implantable triiodothyronine (T3) product for the treatment of hypothyroidism. Any further development will depend on availability of resources and interest from partners.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding the beneficial ownership of our common stock as of September 10, 2018 by:

- our named executive officers;
- each of our directors;
- all of our current directors and executive officers as a group; and
- each stockholder known by us to own beneficially more than five percent of our common stock.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. Shares of Common Stock that may be acquired by an individual or group within 60 days of September 10, 2018, pursuant to the exercise of options are deemed to be outstanding for the purpose of computing the percentage ownership of such individual or group, but are not deemed to be outstanding for the purpose of computing the percentage ownership of any other person shown in the table. The percentage of beneficial ownership of our Common Stock is calculated based on an aggregate of 21,203,744 shares outstanding as of September 10, 2018.

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	Percent of Shares Beneficially Owned
Joseph A. Akers[2]	49,819	*%
Sunil Bhonsle[3]	846,251	3.9
Rajinder Kumar[4]	15,000	*
M. David MacFarlane, Ph.D.[5]	79,552	*
James R. McNab, Jr.[6]	136,819	*
Marc Rubin, M.D.[7]	823,972	3.8
Federico Seghi Recli[8]	2,083	*
Scott A. Smith[9]	15,000	*
All executive officers and directors as a group (8) persons	1,968,496	8.7

* 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) Includes 36,819 shares issuable upon exercise of outstanding options.

(3) Includes (i) 655,989 shares issuable upon exercise of outstanding options and (ii) 54,684 shares held in a family trust for which he serves as trustee.

(4) Includes 15,000 shares issuable upon exercise of outstanding options.

(5) Includes 57,277 shares issuable upon exercise of outstanding options.

(6) Includes 36,819 shares issuable upon exercise of outstanding options.

(7) Includes 667,655 shares issuable upon exercise of outstanding options.

(8) Represents shares issuable upon exercise of outstanding options. Does not include 2,540,000 shares issuable upon conversion of notes and exercise of warrants held by Molteni. Mr. Seghi Recli does not have voting or dispositive power over, and disclaims beneficial ownership of, such underlying shares, except to the extent of his direct pecuniary interest therein. The shares attributed to Molteni are subject to a 4.99% exercise limitation.

(9) Includes 15,000 shares issuable upon exercise of outstanding options

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

In March 2018, we entered into the Loan Agreement, the Purchase Agreement and the Rights Agreement with Molteni. We received and an initial payment of €2.0 million ($2,448,000) for the purchased assets under the Purchase Agreement and granted Molteni seven-year warrants to purchase 540,000 shares of our common stock at an exercise price of $1.20 per share under the Rights Agreement. There is currently $2.4 million owed to Molteni under the Loan Agreement. On May 14, 2018, Federico Seghi Recli joined our board as lead director. Molteni is indirectly owned by Mr. Recli's immediate family.

On August 3, 2018, we entered into an amendment to the Purchase Agreement pursuant to which we received an additional payment of €950,000 ($1,107,000).

See "Business — Probuphine — Agreements" for a description of the Loan Agreement, the Purchase Agreement and the Rights Agreement.

DESCRIPTION OF SECURITIES WE ARE OFFERING

The following description of our capital stock and the provisions of our certificate of incorporation and our bylaws are summaries and are qualified by reference to the certificate of incorporation and the bylaws that will be in effect upon the closing of this offering. We have filed copies of these documents with the SEC as exhibits to our registration statement of which this prospectus forms a part. The descriptions of the common stock and preferred stock reflect changes to our capital structure that will occur prior to and upon the closing of this offering.

General

We are authorized to issue 125,000,000 shares of common stock, par value $0.001 per share, of which 21,203,744 shares are outstanding as of September 10, 2018 (28,410,575 shares on a fully diluted basis assuming exercise of all outstanding options, warrants and convertible debt) and 5,000,000 shares of "blank check" preferred stock, par value $0.0001 per share, none of which are currently outstanding.

Common Stock

Each holder of common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of the stockholders, including the election of directors. Our amended and restated certificate of incorporation and amended and restated bylaws do not provide for cumulative voting rights. Subject to preferences that may be applicable to any then outstanding preferred stock, the holders of our outstanding shares of common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, holders of common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock. Holders of our common stock have no preemptive, conversion or subscription rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of our preferred stock that are outstanding or that we may designate and issue in the future. All of our outstanding shares of common stock are fully paid and nonassessable.

Our common stock is currently listed on The Nasdaq Capital Market under the trading symbol "TTNP."

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company. They are located at 1 State Street, 30th floor, New York, New York 10004. Their telephone number is (212) 509-4000.

Warrants

The following summary of certain terms and provisions of the common warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the warrant agent agreement, the form of which is filed as an exhibit to the registration statement of which this prospectus forms a part. Continental Stock Transfer & Trust Company will act as warrant agent with respect to the warrants issued to the investors in this offering. Prospective investors should carefully review the terms and provisions of the form of warrant agent agreement for a complete description of the terms and conditions of the common warrants.

Form. The warrants will be issued in electronic book-entry form to the investors. You should review a copy of the form of warrant, which is filed as an exhibit to the registration statement of which this prospectus forms a part, for a complete description of the terms and conditions applicable to the warrants.

Exercisability. The warrants are exercisable at any time after their original issuance, expected to be _____ 2018, and at any time up to the date that is five years after their original issuance. The warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and, at any time a registration statement registering the issuance of the shares of common stock underlying the warrants under the Securities Act is effective and available for the issuance of such shares, or

an exemption from registration under the Securities Act is available for the issuance of such shares, by payment in full in immediately available funds for the number of shares of common stock purchased upon such exercise. If a registration statement registering the issuance of the shares of common stock underlying the warrants under the Securities Act is not effective or available and an exemption from registration under the Securities Act is not available for the issuance of such shares, the holder may, in its sole discretion, elect to exercise the warrant through a cashless exercise, in which case the holder would receive upon such exercise the net number of shares of common stock determined according to the formula set forth in the warrant. No fractional shares of common stock will be issued in connection with the exercise of a warrant. In lieu of fractional shares, we will pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price.

Exercise Limitations. A holder will not have the right to exercise any portion of the warrant if the holder (together with its affiliates) would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the warrants.

Exercise Price. The exercise price per whole share of common stock purchasable upon exercise of the warrants is $. The warrants may also be exercised via cashless exercise, whereby the holder will receive upon exercise of the warrant (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the warrant. The exercise price is subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock and also upon any distributions of assets, including cash, stock or other property to our stockholders.

Transferability. Subject to applicable laws, the warrants may be offered for sale, sold, transferred or assigned without our consent.

Exchange Listing. We do not plan on making an application to list the warrants on any national securities exchange or other nationally recognized trading system.

Fundamental Transactions. In the event of a fundamental transaction, as described in the warrants and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding common stock, the holders of the warrants will be entitled to receive upon exercise of the warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the warrants immediately prior to such fundamental transaction.

Right as a Stockholder. Except as otherwise provided in the warrants or by virtue of such holder's ownership of shares of our common stock, the holder of a warrant does not have the rights or privileges of a holder of our common stock, including any voting rights, until the holder exercises the warrant.

Preferred Stock

Our board of directors is empowered, without stockholder approval, to issue shares of preferred stock with dividend, liquidation, redemption, voting or other rights which could adversely affect the voting power or other rights of the holders of common stock. In addition, the preferred stock could be utilized as a method of discouraging, delaying or preventing a change in control of us. Although we do not currently intend to issue any shares of preferred stock other than the Series A Preferred, we cannot assure you that we will not do so in the future.

Series A Convertible Preferred Stock

The following is a summary of the material terms of the Series A Preferred. This summary is not complete. The following summary of the terms and provisions of the Series A Preferred is qualified in its entirety by reference to the form of Certificate of Designation of the Series A Preferred, the form of which has been filed as an exhibit to the registration statement of which this prospectus is a part.

General. Our board of directors has designated up to _____ shares of the 5,000,000 authorized shares of preferred stock as Series A Convertible Preferred Stock. When issued, the shares of Series A Preferred will be validly issued, fully paid and non-assessable. Each share of Series A Preferred will have a stated value of $1,000 per share.

Rank. The Series A Preferred will rank on parity to our common stock.

Conversion. Each share of Series A Preferred is convertible into shares of our common stock (subject to adjustment as provided in the related certificate of designation of preferences, rights and limitations) at any time at the option of the holder at a conversion price equal to the stated value of the Series A Preferred of $1,000 divided by the public offering price of the Class A Units in this offering. Holders of Series A Preferred will be prohibited from converting Series A Preferred into shares of our common stock if, as a result of such conversion, the holder, together with its affiliates, would own more than 4.99% of the total number of shares of our common stock then issued and outstanding.

Liquidation Preference. In the event of our liquidation, dissolution or winding-up, holders of Series A Preferred will be entitled to receive the same amount that a holder of our common stock would receive if the Series A Preferred were fully converted into shares of our common stock at the conversion price (disregarding for such purposes any conversion limitations) which amounts shall be paid pari passu with all holders of common stock.

Voting Rights. Shares of Series A Preferred will generally have no voting rights, except as required by law and except that the affirmative vote of the holders of a majority of the then outstanding shares of Series A Preferred is required to, (a) alter or change adversely the powers, preferences or rights given to the Series A Preferred, (b) amend our certificate of incorporation or other charter documents in any manner that materially adversely affects any rights of the holders, (c) increase the number of authorized shares of Series A Preferred, or (d) enter into any agreement with respect to any of the foregoing.

Dividends. Shares of Series A Preferred will not be entitled to receive any dividends, unless and until specifically declared by our board of directors. The holders of the Series A Preferred will participate, on an as-if-converted-to-common stock basis, in any dividends to the holders of common stock.

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

Exchange Listing. We do not plan on making an application to list the Series A Preferred on any national securities exchange or other nationally recognized trading system.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company.

UNDERWRITING

Alliance Global Partners is acting as the representative of the underwriters and the sole book-running manager in this offering. We have entered into an underwriting agreement dated , 2018 with the representative. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to each underwriter named below and each underwriter named below has severally and not jointly agreed to purchase from us, at the public offering price per share less the underwriting discounts and commissions set forth on the cover page of this prospectus, the number of Units listed next to its name in the following table:

Underwriters	Number of Class A Units	Number of Class B Units
Alliance Global Partners		
CIM Securities, LLC		

The underwriters are committed to purchase all the Units offered by us other than those covered by the option to purchase additional securities described below, if they purchase any Units. The obligations of the underwriters may be terminated upon the occurrence of certain events specified in the underwriting agreement. Furthermore, pursuant to the underwriting agreement, the underwriters' obligations are subject to customary conditions and representations and warranties contained in the underwriting agreement, such as receipt by the underwriters of officers' certificates and legal opinions.

We have agreed to indemnify the underwriters against specified liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect thereof.

The underwriters are offering the Units, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel and other conditions specified in the underwriting agreement. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Option to Purchase Additional Securities

We have granted the underwriters an option to purchase additional shares of common stock and/or warrants to purchase common stock. This option, which is exercisable for up to 45 days after the date of this prospectus, permits the underwriters to purchase a maximum of additional shares of common stock (15% of the shares of common stock included in the Class A Units and the shares of common stock underlying the shares of Series A Preferred included in the Class B Units sold in this offering) and/or warrants to purchase a maximum of shares of common stock from us. If the underwriters exercise all or part of this option, they will purchase such common stock covered by the option at the public offering price per Class A Unit, minus once cent and the warrants covered by the option at a price of one cent per warrant, in each case less the underwriting discounts and commissions. If this option is exercised in full, the total offering price to the public will be approximately $ million and the total net proceeds, after expenses, to us will be approximately $ million.

Discounts, Commissions and Expense Reimbursement

The following table shows the public offering price, underwriting discount and proceeds, before expenses, to us. The information assumes either no exercise or full exercise by the underwriters of their option to purchase additional securities.

	Per Class B Unit	Per Class A Unit	Total Without Over-Allotment Option	Total With Over-Allotment Option
Public offering price	$	$	$	$
Underwriting discount[(1)]	$	$	$	$
Proceeds, before expense, to us	$	$	$	$

(1) We have agreed to pay the underwriters a commission of 4% of the gross proceeds of this offering attributable to participation by certain predetermined investors and 7% of the gross proceeds of this offering to the remaining investors.

The underwriters propose to offer the Units offered by us to the public at the public offering price per respective Unit set forth on the cover of this prospectus. In addition, the underwriters may offer some of the Units to other securities dealers at such price less a concession of up to $ per Class A Unit and $ per Class B Unit.

If all of the Units offered by us are not sold at the respective public offering prices per Unit, the underwriters may change the offering price per Unit and other selling terms by means of a supplement to this prospectus.

We have also agreed to reimburse certain of the representative's out of pocket expenses not to exceed $120,000, including the fees of underwriters' counsel, which will not exceed $70,000, $15,000 for IPREO software related expenses, $6,000 for background check expenses, $2,000 for tombstones and up to $27,000 in marketing related expenses including roadshow expenses.

We estimate that the total expenses of the offering payable by us, excluding the total underwriting discounts, commissions and underwriter expense reimbursement will be approximately $0.2 million.

Representative's Warrants

We have agreed to issue to the representative warrants to purchase up to an aggregate of shares of our common stock (4% of the shares of common stock included in the Class A Units and the shares of common stock underlying the shares of Series B Preferred included in the Class B Units sold in this offering, but excluding any shares of common stock underlying the warrants issued in this offering and any shares of common stock sold (and any shares of common stock underlying any warrants sold) upon exercise of the underwriters' option to purchase additional securities). The warrants will be exercisable at any time, and from time to time, in whole or in part, during the four-year period commencing one year from the effective date of the registration statement relating to this offering. The warrants are exercisable at a per share price equal to $____ per share, or 110% of the public offering price per Class A Unit in the offering. The warrants are deemed underwriter compensation by FINRA and are therefore subject to a 180-day lock-up pursuant to Rule 5110(g)(1) of FINRA. The underwriter (or permitted assignees under Rule 5110(g)(1)) will not sell, transfer, assign, pledge, or hypothecate these warrants or the securities underlying these warrants, nor will they engage in any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of the warrants or the underlying securities for a period of 180 days from the effective date of the registration statement relating to this offering. In addition, the warrants provide for registration rights upon request, in certain cases. The demand registration right provided will expire five years from the effective date of the registration statement relating to this offering in compliance with FINRA Rule 5110(f)(2)(G)(iv). The piggyback registration right provided will expire seven years from the effective date of the registration statement relating to this offering in compliance with FINRA Rule 5110(f)(2)(G)(v). We will bear all fees and expenses attendant to registering the common stock issuable on exercise of the warrants other than underwriting commissions incurred and payable by the holders. The exercise price and number of shares issuable upon exercise of the warrants may be proportionately adjusted in the event of a stock split, stock dividend, recapitalization, reorganization or similar event involving the company in compliance with FINRA Rule 5110(f)(2)(G)(vi).

Lock-Up Agreements

We have agreed with the underwriter not to offer for sale, issue or sell, or register for offer or sale, any of our common stock or securities convertible into our common stock for a period of 90 days after the date of this prospectus, subject to certain exceptions. In addition, all of our directors and executive officers and one of our affiliated securityholders have entered into lock up agreements with the representative prior to the commencement of this offering pursuant to which each of these persons, for a period of 90 days from the closing date of this offering, without the prior written consent of the representative, agree not to (1) offer, pledge, sell, contract to sell, grant, lend, or otherwise transfer or dispose of, directly or indirectly, any of our shares of common stock or any securities convertible into or exercisable or exchangeable for shares our common stock owned or acquired on or prior to the closing date of this offering (including any common shares acquired after the closing date of this offering upon the conversion, exercise or exchange of such securities); (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of such securities, whether any such transaction described

in clause (1) or (2) above is to be settled by delivery of common shares or such other securities, in cash or otherwise, except for certain exceptions and limitations; (3) file or caused to be filed any registration statement relating to the offering of any shares of our capital shares; or (4) publicly disclose the intention to make any offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge or other arrangement relating to such securities.

Right of First Refusal

For a period of nine months immediately following the effective date of the registration statement in connection with this offering, we will grant the representative an irrevocable right of first refusal to act as lead investment banker, lead book-runner and/or lead placement agent, at the representative's sole discretion, for each and every future public and private equity and debt offering, including all equity-linked financings, by us or any of our successors or subsidiaries during such nine month period on terms customary to the representative, and the representative shall have the sole right to determine whether or not any other broker dealer shall have the right to participate in any such offering and the economic terms of any such participation.

Electronic Offer, Sale and Distribution of Securities

A prospectus in electronic format may be made available on the websites maintained by one or more of the underwriters or selling group members, if any, participating in this offering and one or more of the underwriters participating in this offering may distribute prospectuses electronically. The representative may agree to allocate a number of either class of Unit to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriters and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of, nor incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

The Nasdaq Capital Market Listing

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

Stabilization

In connection with this offering, the underwriters may engage in stabilizing transactions, over-allotment transactions, syndicate-covering transactions, penalty bids and purchases to cover positions created by short sales. Stabilizing transactions permit bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum, and are engaged in for the purpose of preventing or retarding a decline in the market price of the shares while the offering is in progress.

Over-allotment transactions involve sales by the underwriters of shares in excess of the number of shares the underwriters are obligated to purchase. This creates a syndicate short position that may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriters is not greater than the number of shares that naked short position, the number of shares involved is greater than the number of shares in the over-allotment option. The underwriters may close out any short position by exercising their option to purchase additional shares of common stock and/or warrants to purchase common stock and/or purchasing shares in the open market.

Syndicate covering transactions involve purchases of shares in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared with the price at which they may purchase shares through exercise of the over-allotment option. If the underwriters sell more shares than could be covered by exercise of the over-allotment option and, therefore, have a naked short position, the position can be closed out only by buying shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that after pricing there could be downward pressure on the price of the shares in the open market that could adversely affect investors who purchase in the offering.

Penalty bids permit the representative to reclaim a selling concession from a syndicate member when the shares originally sold by that syndicate member are purchased in stabilizing or syndicate covering transactions to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our shares or common stock or preventing or retarding a decline in the market price of our shares or common stock. As a result, the price of our common stock in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected on The Nasdaq Capital Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

Passive market making

In connection with this offering, underwriters and selling group members may engage in passive market making transactions in our common stock on The Nasdaq Capital Market in accordance with Rule 103 of Regulation M under the Exchange Act, during a period before the commencement of offers or sales of the shares and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, then that bid must then be lowered when specified purchase limits are exceeded.

Certain Relationships

The underwriters and their affiliates have provided, or may in the future provide, various investment banking, commercial banking, financial advisory, brokerage, and other services to us and our affiliates for which services they have received, and may in the future receive, customary fees and expense reimbursement.

The underwriters and their affiliates may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriters and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own accounts and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of our company. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Offer Restrictions Outside the United States

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Loeb & Loeb LLP, New York, New York. The underwriters are being represented by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York.

EXPERTS

The financial statements as of December 31, 2017 and 2016 and for each of the two years in the period ended December 31, 2017 incorporated by reference in this Prospectus and in the Registration Statement have been so incorporated in reliance on the report of OUM, LLP, an independent registered public accounting firm (the report on the financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated by reference in this Prospectus and in the Registration Statement, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We have filed with the Securities and Exchange Commission a registration statement on Form S-1 under the Securities Act with respect to the securities offered by this prospectus. This prospectus, which is part of the registration statement, omits certain information, exhibits, schedules and undertakings set forth in the registration statement. For further information pertaining to us and the securities offered hereby, reference is made to the registration statement and the exhibits and schedules to the registration statement. Statements contained in this prospectus as to the contents or provisions of any documents referred to in this prospectus are not necessarily complete, and in each instance where a copy of the document has been filed as an exhibit to the registration statement, reference is made to the exhibit for a more complete description of the matters involved.

You may read and copy all or any portion of the registration statement without charge at the public reference room of the Securities and Exchange Commission at 100 F Street, N.E., Washington, D.C. 20549. Copies of the registration statement may be obtained from the Securities and Exchange Commission at prescribed rates from the public reference room of the Securities and Exchange Commission at such address. You may obtain information regarding the operation of the public reference room by calling 1-800-SEC-0330. In addition, registration statements and certain other filings made with the Securities and Exchange Commission electronically are publicly available through the Securities and Exchange Commission's website at www.sec.gov. The registration statement, including all exhibits and amendments to the registration statement, has been filed electronically with the Securities and Exchange Commission. You may also read all or any portion of the registration statement and certain other filings made with the Securities and Exchange Commission on our website at www.heatbio.com. The information contained in, and that can be accessed through, our website is not incorporated into and is not part of this prospectus.

We are subject to the information and periodic reporting requirements of the Exchange Act and, accordingly, are required to file annual reports containing financial statements audited by an independent public accounting firm, quarterly reports containing unaudited financial data, current reports, proxy statements and other information with the Securities and Exchange Commission. You will be able to inspect and copy such periodic reports, proxy statements and other information at the Securities and Exchange Commission's public reference room, the website of the Securities and Exchange Commission referred to above, and our website at www.titanpharm.com. Except for the specific incorporated reports and documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

We "incorporate by reference" certain documents we have filed with the SEC, which means that we are disclosing important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus, and any information contained in any document incorporated by reference in this prospectus will be deemed to be modified or superseded to the extent that a statement contained in this prospectus or free writing prospectus provided to you in connection with this offering modified or supersedes the original statement. Any statement so modified or

superseded will not be deemed, except as so modified or superseded, to be a part of this prospectus. The later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (Commission File No. 001-13341) after (i) the date of this initial registration statement and prior to effectiveness of this registration statement and (ii) the date of this prospectus and before the completion of the offering of the securities included in this prospectus, however, we will not incorporate by reference any documents or portions thereof that are not deemed "filed" with the SEC, or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K:

- Our Annual Report on Form 10-K for the year ended December 31, 2017 filed on April 2, 2018;
- Our Quarterly Report on Form 10-Q, filed on May 15, 2018;
- Our Quarterly Report on Form 10-Q, filed on August 14, 2018;
- Our Current Report on Form 8-K filed on January 22, 2018;
- Our Current Report on Form 8-K filed on February 7, 2018;
- Our Current Report on Form 8-K filed on March 26, 2018;
- Our Current Report on Form 8-K filed on April 13, 2018;
- Our Current Report on Form 8-K filed on May 16, 2018;
- Our Current Report on Form 8-K filed on May 30, 2018;
- Our Current Report on Form 8-K filed on June 1, 2018;
- Our Current Report on Form 8-K filed on July 31, 2018;
- Our Current Report on Form 8-K filed on August 3, 2018;
- Our Current Report on Form 8-K filed on August 8, 2018;
- Our Current Report on Form 8-K filed on August 17, 2018;
- Our Current Report on Form 8-K filed on September 4, 2018;
- Our Current Report on Form 8-K filed on September 10, 2018;
- Our Definitive Proxy Statement on Schedule 14A filed with the SEC on July 2, 2018; and
- The description of the our common stock set forth in the Registration Statement on Form 8-A12B filed on October 8, 2015.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the reports or documents that we incorporate by reference in this prospectus contained in the registration statement (except exhibits to the documents that are not specifically incorporated by reference) at no cost to you, by writing or calling us at the following address and telephone number:

Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080
(650) 244-4990

Information about us is available at our website at www.titanpharm.com. Except for the specific incorporated reports and documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

3,358,209 Class A Units
Consisting of Common Stock and Warrants
and
12,750 Class B Units
Consisting of Series A Convertible Preferred Stock and Warrants

PROSPECTUS

A.G.P.

CIM Securities, LLC

, 2018

Through and including , 2018 (25 days after commencement of this offering), all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to their unsold allotments or subscriptions.

PART II — INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution

We estimate that expenses in connection with the distribution described in this registration statement (other than fees and commissions charged by the underwriters) will be as set forth below. We will pay all of the expenses with respect to the distribution, and such amounts, with the exception of the SEC registration fee and the Financial Industry Regulatory Authority, Inc., or FINRA, filing fee, are estimates.

SEC registration fee	$ 3,572.06
FINRA filing fee	4,803.69
Accounting fees and expenses	30,000.00
Printing fees	10,000.00
Legal fees and expenses	160,000.00
Underwriters' out-of-pocket expenses	120,000.00
Transfer agent and warrant agent fees	2,500.00
Miscellaneous expenses	9,124.25
Total	$340,000.00

Item 14. Indemnification of Directors and Officers

Subsection (a) of Section 145 of the General Corporation Law of the State of Delaware, or DGCL, empowers a corporation to indemnify any person who was or is a party or who is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful.

Subsection (b) of Section 145 empowers a corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person acted in any of the capacities set forth above, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Section 145 further provides that to the extent a director or officer of a corporation has been successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in subsections (a) and (b) of Section 145, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith; that indemnification provided for by Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled; and the indemnification provided for by Section 145 shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of such person's heirs, executors and administrators. Section 145 also empowers the corporation to purchase and maintain insurance on behalf

of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of his status as such, whether or not the corporation would have the power to indemnify such person against such liabilities under Section 145.

Section 102(b)(7) of the DGCL provides that a corporation's certificate of incorporation may contain a provision eliminating or limiting the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of a director (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL, or (iv) for any transaction from which the director derived an improper personal benefit.

Our certificate of incorporation and our bylaws provide that we will indemnify our directors and officers to the fullest extent permitted by the DGCL, which prohibits our certificate of incorporation from limiting the liability of our directors for the following:

- any breach of the director's duty of loyalty to us or our stockholders;
- acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or unlawful stock repurchases or redemptions; or
- any transaction from which the director derived an improper benefit.

Our amended and restated certificate of incorporation provides for indemnification of our directors and executive officers to the maximum extent permitted by the DGCL, and our amended and restated bylaws provide for indemnification of our directors and executive officers to the maximum extent permitted by the DGCL.

We have entered into indemnification agreements with each of our current directors. These agreements will require us to indemnify these individuals to the fullest extent permitted under Delaware law against liabilities that may arise by reason of their service to us and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified. We also intend to enter into indemnification agreements with our future directors and executive officers.

In any underwriting agreement we enter into in connection with the sale of common stock and pre-funded warrants being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us, within the meaning of the Securities Act, against certain liabilities.

Item 15. Recent Sales of Unregistered Securities

The following information sets forth certain information with respect to all securities which we have sold during the last three years.

In May and June 2016, 1,072,307 shares of common stock were issued to investors in our 2014 public offering upon the cashless net exercise of 2,016,075 Class A Warrants in accordance with their terms. The issuance of these shares was exempt from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), pursuant to Section 4(a)(2) thereof as a transaction by an issuer not involving a public offering.

In May and June 2016, 58,569 shares of common stock were issued to the underwriter of the 2014 public offering upon the cashless net exercise of 114,546 Underwriter Warrants in accordance with their terms. The issuance of these shares was exempt from the registration requirements of the Securities Act, pursuant to Section 4(a)(2) thereof as a transaction by an issuer not involving a public offering.

Item 16. Exhibits

Exhibit No.	Description
1.1	Form of Underwriting Agreement between Titan Pharmaceuticals, Inc. and A.G.P./Alliance Global Partners
3.1.1	Amended and Restated Certificate of Incorporation of the Registrant, as amended(5)
3.1.2	Certificate of Amendment to the Restated Certificate of Incorporation dated September 24, 2015(14)
3.2	By-laws of the Registrant(1)
3.3**	Form of Certificate of Designation of Series A Convertible Preferred Stock
4.1	Form of 2014 Class A Warrant(13)
4.3	Form of 2014 Underwriter Warrant(13)
4.4	Form of Lender Warrant(18)
4.5	Form of Rights Agreement Warrant(20)
4.6	Form of Warrant Agency Agreement between Titan Pharmaceuticals, Inc. and Continental Stock Transfer & Trust Company and Form of Offering Warrant
4.7	Form of Representative's Purchase Warrant
5.1	Opinion of Loeb & Loeb LLP
10.1	2001 Non-Qualified Employee Stock Option Plan(2)
10.2	2002 Stock Option Plan(3)
10.3	Lease for the Registrant's facilities, amended as of October 1, 2004(4)
10.4	Amendments to lease for Registrant's facilities dated May 21, 2007 and March 12, 2009(5)
10.5	Amendment to lease for Registrant's facilities dated June 15, 2010(6)
10.6±	License Agreement by and between Titan Pharmaceuticals, Inc. and Braeburn Pharmaceuticals Sprl, dated December 14, 2012(8)
10.7	Amendment dated May 28, 2013 to License Agreement by and between Titan Pharmaceuticals, Inc. and Braeburn Pharmaceuticals Sprl(9)
10.8	Second Amendment dated July 2, 2013 to License Agreement by and between Titan Pharmaceuticals, Inc. and Braeburn Pharmaceuticals Sprl(10)
10.9	Third Amendment dated November 12, 2013 to License Agreement by and between Titan Pharmaceuticals, Inc. and Braeburn Pharmaceuticals Sprl(15)
10.10	Titan Pharmaceuticals, Inc. 2014 Incentive Plan(12)
10.11	Titan Pharmaceuticals, Inc. Second Amended and Restated 2015 Omnibus Equity Incentive Plan(22)
10.12	Controlled Equity Offering℠ Sales Agreement, dated September 1, 2016, between Titan Pharmaceuticals, Inc. and Cantor Fitzgerald & Co.(16)
10.13	Employment Agreement between Titan Pharmaceuticals, Inc. and Titan Pharmaceuticals, Inc. and Sunil Bhonsle(17)
10.14	Employment Agreement between Titan Pharmaceuticals, Inc. and Titan Pharmaceuticals, Inc. and Marc Rubin(17)
10.15	Venture Loan and Security Agreement, dated July 27, 2017, by and between Titan Pharmaceuticals, Inc. and Horizon Technology Finance Corporation(18)
10.16	Amendment of Venture Loan and Security Agreement, dated February 2, 2018, by and between Titan Pharmaceuticals, Inc. and Horizon Technology Finance Corporation(19)
10.17	Amended and Restated Venture Loan and Security Agreement, dated March 21, 2018, by and between Titan Pharmaceuticals, Inc., Horizon Technology Finance Corporation and L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A.(20)
10.18±	Asset Purchase, Supply and Support Agreement dated March 21, 2018, by and between Titan Pharmaceuticals, Inc. and L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A.(20)
10.19	Rights Agreement dated March 21, 2018, by and between Titan Pharmaceuticals, Inc. and L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A.(20)
10.20±	Termination and Transition Services Agreement dated May 25, 2018 by and between Titan

Exhibit No.	Description
	Pharmaceuticals, Inc. and Braeburn Pharmaceuticals, Inc.(21)
10.21±	Amendment to Asset Purchase, Supply and Support Agreement dated August 3, 2018, by and between Titan Pharmaceuticals, Inc. and L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio S.P.A(22)
10.22±	Distribution and Sublicense Agreement dated February 1, 2016 as amended by agreement dated August 2, 2018 between Titan Pharmaceuticals, Inc. and Knight Therapeutics Inc.(23)
10.23	Amendment to lease for Registrant's facility dated March 21, 2016(23)
10.24	Amendment to Employment Agreement with Sunil Bhonsle dated August 9, 2018(23)
10.25	Amendment to Employment Agreement with Marc Rubin dated August 9, 2018(23)
14.1	Code of Business Conduct and Ethics(13)
23.1	Consent of OUM & Co., LLP, Independent Registered Public Accounting Firm
23.2	Consent of Loeb & Loeb LLP (contained in Exhibit 5.1)
24.1**	Power of Attorney (included on the signature page of this Registration Statement)

** Previously filed.

± Confidential treatment has been granted as to certain portions of this exhibit.

(1) Incorporated by reference from the Registrant's Registration Statement on Form S-3 (File No. 333-21126).

(2) Incorporated by reference from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2001.

(3) Incorporated by reference from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2002.

(4) Incorporated by reference from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.

(5) Incorporated by reference from the Registrant's Registration Statement on Form 10 filed on January 14, 2010.

(6) Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2010.

(7) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on April 10, 2012.

(8) Incorporated by reference from the Registrant's Current Report on Form 8-K/A filed on February 28, 2013.

(9) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on May 29, 2013.

(10) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on July 5, 2013.

(11) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on November 13, 2013.

(12) Incorporated by reference from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2013.

(13) Incorporated by reference from the Registrant's Registration Statement on Form S-1/A dated September 30, 2014.

(14) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on September 28, 2015.

(15) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on August 3, 2016.

(16) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on September 1, 2016.

(17) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on October 3, 2016.

(18) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on July 27, 2017.

(19) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on February 7, 2018.

(20) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on March 26, 2018.

(21) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on May 30, 2018.

(22) Incorporated by reference from the Registrant's Current Report on Form 8-K filed on August 3, 2018.

(23) Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2018.

ITEM 17. UNDERTAKINGS

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933 (the "Securities Act");

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, that Paragraphs (a)(1)(i), (ii), and (iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act to any purchaser: If the registrant is subject to Rule 430C (§230.430C of this chapter), each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A (§230.430A of this chapter), shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration

statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for the purpose of determining liability under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§230.424 of this chapter);

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.

(d) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Company pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

(e) For the purpose of determining any liability under the Securities Act, the registrant will treat the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant under Rule 424(b)(1), or (4), or 497(h) under the Securities Act as part of this registration statement as of the time the Commission declared it effective.

(f) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant has duly caused this Registration Statement on Form S-1 or amendment thereto to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of South San Francisco, State of California, this September 11, 2018.

TITAN PHARMACEUTICALS, INC.

By: /s/ Sunil Bhonsle

Name: Sunil Bhonsle

Title: Chief Executive Officer and President

Pursuant to the requirements of the Securities Act of 1933, as amended, this report has been signed 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	September 11, 2018
/s/ Sunil Bhonsle Sunil Bhonsle	President, Chief Executive Officer and Director (principal executive officer and principal financial officer)	September 11, 2018
* Joseph A. Akers	Director	September 11, 2018
* Rajinder Kumar, Ph.D.	Director	September 11, 2018
* M. David MacFarlane, Ph.D.	Director	September 11, 2018
* James R. McNab, Jr.	Director	September 11, 2018
* Federico Seghi Recli	Director	September 11, 2018
* Scott A. Smith	Director	September 11, 2018
/s/ Brian E. Crowley Brian E. Crowley	Vice President, Finance (principal accounting officer)	September 11, 2018

*By: /s/ Sunil Bhonsle
Sunil Bhonsle
Attorney-in-fact

Exhibit 1.1

UNDERWRITING AGREEMENT

between

TITAN PHARMACEUTICALS, INC.

and

A.G.P./ALLIANCE GLOBAL PARTNERS,

as Representative of the Several Underwriters

TITAN PHARMACEUTICALS, INC.
UNDERWRITING AGREEMENT

New York, New York

September [ ], 2018

A.G.P./Alliance Global Partners
As Representative of the several Underwriters named on Schedule 1 attached hereto
590 Madison Avenue
New York, NY 10022
Ladies and Gentlemen:

The undersigned, Titan Pharmaceuticals, Inc., a corporation formed under the laws of the State of Delaware (the "**Company**"), hereby confirms its agreement (this "**Agreement**") with A.G.P./Alliance Global Partners (hereinafter referred to as "you" (including its correlatives) or the "**Representative**") and with the other underwriters named on Schedule 1 hereto for which the Representative is acting as representative (the Representative and such other underwriters being collectively called the "**Underwriters**" or, individually, an "**Underwriter**") as follows:

1. Purchase and Sale of Securities.

1.1 Firm Securities.

1.1.1. Nature and Purchase of Firm Securities.

(i) On the basis of the representations and warranties herein contained, but subject to the terms and conditions herein set forth, the Company agrees to issue and sell to the several Underwriters, an aggregate of [ ] Class A Units (each, a "**Class A Unit** " and collectively, the "**Class A Units** "), each Class A Unit consisting of one share of the Company's common stock, par value $0.001 per share (the "**Common Stock**"), and a warrant, in the form filed as Exhibit A to Exhibit 4.6 to the Registration Statement (as defined in Section 2.1.1 below), to purchase 0.5 of a share of Common Stock (each, a "**Warrant**" and collectively, the "**Warrants**"), and an aggregate of [ ] Class B Units (each, a "**Class B Unit**" and collectively, the "**Class B Units**"), each Class B Unit consisting of one share of Series A Convertible Preferred Stock, par value $0.001 per share (the " **Preferred Stock**"), and a Warrant to purchase the number of shares as would have been issued to such purchaser if they had purchased Class A Units based on the public offering price. Each Warrant shall be exercisable for a period of five (5) years at an exercise price of $[ ] per share, subject to adjustment as provided in the Warrants. The [ ] Class A Units and the [ ] Class B Units are collectively referred to herein as the "**Firm Securities**."

(ii) The Underwriters, severally and not jointly, agree to purchase from the Company the number of Firm Securities set forth opposite their respective names on Schedule 1 attached hereto and made a part hereof, at a purchase price of $[ ] per Class A Unit (93% of the per Class A Unit offering price) and $930.00 per Class B Unit (93% of the per Class B Unit offering price). The Firm Securities are to be offered initially to the public as units at the respective offering prices set forth on the cover page of the Prospectus (as defined in Section 2.1.1 hereof).

1.1.2. Firm Securities Payment and Delivery.

(i) Delivery and payment for the Firm Securities shall be made at 10:00 a.m., Eastern time, on [ ][1] or at such time on such other date, not later than five (5) Business Days after the date of this Agreement, as shall be agreed upon by the Company and the Representative, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., 666 Third Avenue, New York, New York 10017 ("**Representative Counsel**"), or at such other place (or remotely by facsimile or other electronic transmission) as shall be agreed upon by the Representative and the Company. The hour and date of delivery and payment for the Firm Securities is called the "**Closing Date**." The Warrants shall be issued pursuant to, and shall have the rights and privileges set forth in the form of Warrant and in a warrant agency agreement, dated on or before the Closing Date, between the Company and Continental Stock Transfer & Trust Company, as warrant agent (the "**Warrant Agreement**"). The term "**Business Day**" means any day other than a Saturday, a Sunday or a legal holiday or a day on which banking institutions are authorized or obligated by law to close in New York, New York.

(ii) Payment for the Firm Securities shall be made on the Closing Date by wire transfer in Federal (same day) funds, payable to the order of the Company upon delivery of the certificates (in form and substance satisfactory to the Underwriters) representing the Firm Securities (or through the facilities of the Depository Trust Company ("**DTC**")) for the account of the Underwriters. The Firm Securities shall be registered in such name or names and in such authorized denominations as the Representative may request in writing at least one (1) full Business Day prior to the Closing Date. The Company shall not be obligated to sell or deliver the Firm Securities except upon tender of payment by the Representative for all of the Firm Securities.

1.2 Option to Purchase Additional Securities.

1.2.1. Option Securities. For the purposes of covering any over-allotments in connection with the distribution and sale of the Firm Securities, the Company hereby grants to the Underwriters an option to purchase up to [ ] additional shares of Common Stock, representing fifteen percent (15%) of the shares of Common Stock sold as part of the Class A Units and the shares of Common Stock issuable upon conversion of the Preferred Stock sold as part of the Class B Units in the offering, and/or up to [ ] additional Warrants, representing fifteen percent (15%) of the Warrants sold as part of the Class A Units and the Warrants sold as part of the Class B Units, from the Company (the "**Option**"). Such [ ] additional shares of Common Stock are hereinafter referred to as "**Option Shares,**" and the [ ] additional Warrants are hereinafter referred to as "**Option Warrants**". The purchase price to be paid per Option Share shall be $[ ]. The purchase price to be paid per Option Warrant shall be $0.01. The Firm Securities, the Option Shares and the Option Warrants are hereinafter referred to collectively as the "**Public Securities**." The offering and sale of the Public Securities is hereinafter referred to as the "**Offering**."

[1] Insert date that is T+2 days.

1.2.2. Exercise of Option. The Option granted pursuant to Section 1.2.1 hereof may be exercised by the Representative as to all (at any time) or any part (from time to time) of the Option Shares and/or Option Warrants within 45 days after the effective date (the "Effective Date") of the Registration Statement. The Underwriters shall not be under any obligation to purchase any Option Shares or Option Warrants prior to the exercise of the Option. The Option granted hereby may be exercised by the giving of oral notice to the Company from the Representative, which must be confirmed in writing by overnight mail or facsimile or other electronic transmission setting forth the number of Option Shares and/or Option Warrants to be purchased and the date and time for delivery of and payment for the Option Shares and/or Option Warrants (the "**Option Closing Date**"), which shall not be later than five (5) full Business Days after the date of the notice or such other time as shall be agreed upon by the Company and the Representative, at the offices of Representative Counsel or at such other place (including remotely by facsimile or other electronic transmission) as shall be agreed upon by the Company and the Representative. If such delivery and payment for the Option Shares and/or Option Warrants does not occur on the Closing Date, the Option Closing Date will be as set forth in the notice. Upon exercise of the Option with respect to all or any portion of the Option Shares and/or Option Warrants, subject to the terms and conditions set forth herein, (i) the Company shall become obligated to sell to the Underwriters the number of Option Shares and/or Option Warrants specified in such notice and (ii) each of the Underwriters, acting severally and not jointly, shall purchase that portion of the total number of Option Shares and/or Option Warrants then being purchased as set forth in Schedule 1 opposite the name of such Underwriter.

1.2.3. Payment and Delivery. Payment for the Option Shares and/or Option Warrants shall be made on the Option Closing Date by wire transfer in Federal (same day) funds, payable to the order of the Company, which Option Shares shall be delivered via The Depository Trust Company Deposit or Withdrawal at Custodian system for the accounts of the several Underwriters and the Option Warrants will be delivered in certificated form. The Option Shares and/or Option Warrants, as applicable, shall be registered in such name or names and in such authorized denominations as the Representative may request in writing at least one (1) full Business Day prior to the Option Closing Date. The Company shall not be obligated to sell or deliver the Option Shares and/or Option Warrants except upon tender of payment by the Representative for the applicable Option Shares and/or Option Warrants.

1.3 Representative's Warrants.

1.3.1. Purchase Warrants. The Company hereby agrees to issue to the Representative (and/or its designees) on the Closing Date a warrant ("**Representative's Warrant**") for the purchase of an aggregate of [ ] shares of Common Stock, representing 4% of the sum of (i) the number of shares of Common Stock contained in the Class A Units sold in this offering and (ii) the number of shares of Common Stock issuable upon conversion of the Preferred Stock contained in the Class B Units sold in this offering, if any, but excluding shares of Common Stock underlying the Warrants issued in this offering and shares of Common Stock (and shares of Common Stock underlying any Warrants) sold, if any, upon exercise of the underwriter's Option. The Representative's Warrant agreement, in the form attached hereto as Exhibit A (the "**Representative's Warrant Agreement**"), shall be exercisable, in whole or in part, commencing on a date which is one (1) year after the Effective Date and expiring on the five-year anniversary of the Effective Date at an initial exercise price per share of Common Stock of $[ ], which is equal to 110% of the public offering price of the Class A Units sold in this offering. The Representative's Warrant Agreement and the shares of Common Stock issuable upon exercise thereof (the " **Representative's Warrant Shares**") are hereinafter referred to together as the "**Representative's Securities**.") The Representative understands and agrees that there are significant restrictions pursuant to FINRA Rule 5110 against transferring the Representative's Warrant Agreement and the underlying shares of Common Stock during the one hundred eighty (180) days after the Effective Date and by its acceptance thereof shall agree that it will not sell, transfer, assign, pledge or hypothecate the Representative's Warrant Agreement, or any portion thereof, or be the subject of any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of such securities for a period of one hundred eighty (180) days following the Effective Date to anyone other than (i) an Underwriter or a selected dealer in connection with the Offering, or (ii) a bona fide officer or partner of the Representative or of any such Underwriter or selected dealer; and only if any such transferee agrees to the foregoing lock-up restrictions.

1.3.2. Delivery. Delivery of the Representative's Warrant Agreement shall be made on the Closing Date and shall be issued in the name or names and in such authorized denominations as the Representative may request at least one (1) full Business Day prior to the Closing Date.

2. Representations and Warranties of the Company. The Company represents and warrants to the Underwriters as of the Applicable Time (as defined below), as of the Closing Date and as of the Option Closing Date, if any, as follows:

2.1 Filing of Registration Statement.

2.1.1. Pursuant to the Securities Act. The Company has filed with the U.S. Securities and Exchange Commission (the "**Commission**") a registration statement, and an amendment or amendments thereto, on Form S-1 (File No. 333-226841), including any related prospectus or prospectuses, for the registration of the Public Securities, and the shares of Common Stock issuable upon exercise of the Warrants (the "**Warrant Shares**") and the Common Stock issuable upon conversion of the Preferred Stock (the "**Preferred Conversion Shares**") included in the Public Securities and the Representative's Securities, under the Securities Act of 1933, as amended (the "**Securities Act**"), which registration statement and amendment or amendments have been prepared by the Company in all material respects in conformity with the requirements of the Securities Act and the rules and regulations of the Commission under the Securities Act (the "**Securities Act Regulations**") and will contain all material statements that are required to be stated therein in accordance with the Securities Act and the Securities Act Regulations. Except as the context may otherwise require, such registration statement, as amended, on file with the Commission at the time the registration statement became effective (including the Preliminary Prospectus included in the registration statement, financial statements, schedules, exhibits and all other documents filed as a part thereof or incorporated therein and all information deemed to be a part thereof as of the Effective Date pursuant to paragraph (b) of Rule 430A of the Securities Act Regulations (the "**Rule 430A Information**")), is referred to herein as the "**Registration Statement**." If the Company files any registration statement pursuant to Rule 462(b) of the Securities Act Regulations, then after such filing, the term "Registration Statement" shall include such registration statement filed pursuant to Rule 462(b). The Registration Statement has been declared effective by the Commission on the date hereof.

Each prospectus used prior to the effectiveness of the Registration Statement, and each prospectus that omitted the Rule 430A Information that was used after such effectiveness and prior to the execution and delivery of this Agreement, is herein called a "**Preliminary Prospectus**." The Preliminary Prospectus, subject to completion, dated September [ ], 2018, that was included in the Registration Statement immediately prior to the Applicable Time is hereinafter called the "**Pricing Prospectus**." The final prospectus in the form first furnished to the Underwriters for use in the Offering is hereinafter called the "**Prospectus**." Any reference to the "most recent Preliminary Prospectus" shall be deemed to refer to the latest Preliminary Prospectus included in the Registration Statement.

"**Applicable Time**" means 8:00 [a.m./p.m.], Eastern time, on the date of this Agreement.

"**Issuer Free Writing Prospectus**" means any "issuer free writing prospectus," as defined in Rule 433 of the Securities Act Regulations ("**Rule 433**"), including without limitation any "free writing prospectus" (as defined in Rule 405 of the Securities Act Regulations) relating to the Public Securities that is (i) required to be filed with the Commission by the Company, (ii) a "road show that is a written communication" within the meaning of Rule 433(d)(8)(i), whether or not required to be filed with the Commission, or (iii) exempt from filing with the Commission pursuant to Rule 433(d)(5)(i) because it contains a description of the Public Securities or of the Offering that does not reflect the final terms, in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company's records pursuant to Rule 433(g).

"**Issuer General Use Free Writing Prospectus**" means any Issuer Free Writing Prospectus that is intended for general distribution to prospective investors (other than a "*bona fide* electronic road show," as defined in Rule 433), as evidenced by its being specified in Schedule 2-B hereto.

"**Issuer Limited Use Free Writing Prospectus**" means any Issuer Free Writing Prospectus that is not an Issuer General Use Free Writing Prospectus.

"**Pricing Disclosure Package**" means any Issuer General Use Free Writing Prospectus issued at or prior to the Applicable Time, the Pricing Prospectus and the information included on Schedule 2-A hereto, all considered together.

2.1.1. Pursuant to the Exchange Act. The Common Stock is registered pursuant to Section 12(b) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"). The Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act, nor has the Company received any notification that the Commission is contemplating terminating such registration.

2.2 Stock Exchange Listing. The shares of Common Stock are listed on The Nasdaq Capital Market (the "**Exchange**"), and the Company has taken no action designed to, or likely to have the effect of, delisting the Common Stock from the Exchange, nor has the Company received any notification that the Exchange is contemplating terminating such listing except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus. The Company has filed an application for the Listing of Additional Shares with the Exchange to list the shares of Common Stock included in the Public Securities, the Preferred Conversion Shares, the Warrant Shares and the Representative's Warrant Shares.

2.3 No Stop Orders, etc. Neither the Commission nor, to the Company's knowledge, any state regulatory authority has issued any order preventing or suspending the use of the Registration Statement, any Preliminary Prospectus or the Prospectus or has instituted or, to the Company's knowledge, threatened to institute, any proceedings with respect to such an order. The Company has complied with each request (if any) from the Commission for additional information.

2.4 Disclosures in Registration Statement.

2.4.1. Compliance with Securities Act and 10b-5 Representation.

(i) Each of the Registration Statement and any post-effective amendment thereto, at the time it became effective, complied in all material respects with the requirements of the Securities Act and the Securities Act Regulations. Each Preliminary Prospectus, including the prospectus filed as part of the Registration Statement as originally filed or as part of any amendment or supplement thereto, and the Prospectus, at the time each was filed with the Commission, complied in all material respects with the requirements of the Securities Act and the Securities Act Regulations. Each Preliminary Prospectus delivered to the Underwriters for use in connection with this Offering and the Prospectus was or will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(ii) Neither the Registration Statement nor any amendment thereto, at its effective time, as of the Applicable Time, at the Closing Date or at any Option Closing Date (if any), contained, contains or will contain an untrue statement of a material fact or omitted, omits or will omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; provided, however, that this representation and warranty shall not apply to statements made or statements omitted in reliance upon and in conformity with written information furnished to the Company with respect to the Underwriters by the Representative expressly for use in the Registration Statement, the Pricing Prospectus or the Prospectus or any amendment thereof or supplement thereto. The parties acknowledge and agree that such information provided by or on behalf of any Underwriter consists solely of the following disclosure contained in the "Underwriting" section of the Prospectus: (i) the table showing the number of securities to be purchased by each Underwriter and the amount of the selling concession, and (ii) the sections titled ["Electronic Offer, Sale and Distribution of Securities", "Stabilization", "Passive Market Making" and "Offer Restrictions Outside the United States"][2] (the "**Underwriters' Information**").

[2] NTD: Subject to confirmation of section headings in prospectus supplement.

(iii) The Pricing Disclosure Package, as of the Applicable Time, at the Closing Date or at any Option Closing Date (if any), did not, does not and will not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; and each Issuer Limited Use Free Writing Prospectus hereto does not conflict with the information contained in the Registration Statement, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, and each such Issuer Limited Use Free Writing Prospectus, as supplemented by and taken together with the Pricing Prospectus as of the Applicable Time, did not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to statements made or statements omitted in reliance upon and in conformity with the Underwriters' Information; and

(iv) Neither the Prospectus nor any amendment or supplement thereto (including any prospectus wrapper), as of its issue date, at the time of any filing with the Commission pursuant to Rule 424(b), at the Closing Date or at any Option Closing Date, included, includes or will include an untrue statement of a material fact or omitted, omits or will omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to the Underwriters' Information.

2.4.2. Disclosure of Agreements. The agreements and documents described in the Registration Statement, the Pricing Disclosure Package and the Prospectus conform in all material respects to the descriptions thereof contained therein and there are no agreements or other documents required by the Securities Act and the Securities Act Regulations to be described in the Registration Statement, the Pricing Disclosure Package and the Prospectus or to be filed with the Commission as exhibits to the Registration Statement, that have not been so described or filed. Each agreement or other instrument (however characterized or described) to which the Company is a party or by which it is or may be bound or affected and (i) that is referred to in the Registration Statement, the Pricing Disclosure Package and the Prospectus, or (ii) is material to the Company's business, has been duly authorized and validly executed by the Company, is in full force and effect in all material respects and is enforceable against the Company and, to the Company's knowledge, the other parties thereto, in accordance with its terms, except (x) as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting creditors' rights generally, (y) as enforceability of any indemnification or contribution provision may be limited under the federal and state securities laws, and (z) that the remedy of specific performance and injunctive and other forms of equitable relief may be subject to the equitable defenses and to the discretion of the court before which any proceeding therefor may be brought. None of such agreements or instruments has been assigned by the Company, and neither the Company nor, to the Company's knowledge, any other party is in default thereunder and, to the Company's knowledge, no event has occurred that, with the lapse of time or the giving of notice, or both, would constitute a default thereunder. To the best of the Company's knowledge, performance by the Company of the material provisions of such agreements or instruments will not result in a violation of any existing applicable law, rule, regulation, judgment, order or decree of any governmental agency or court, domestic or foreign, having jurisdiction over the Company or any of its assets or businesses (each, a "**Governmental Entity**"), including, without limitation, those relating to environmental laws and regulations.

2.4.3. Prior Securities Transactions. Since September 1, 2015, no securities of the Company have been sold by the Company or by or on behalf of, or for the benefit of, any person or persons controlling, controlled by or under common control with the Company, except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

2.4.4. Regulations. The disclosures in the Registration Statement, the Pricing Disclosure Package and the Prospectus concerning the effects of federal, state, local and all foreign regulation on the Offering and the Company's business as currently contemplated are correct in all material respects and no other such regulations are required to be disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus which are not so disclosed.

2.4.5. No Other Distribution of Offering Materials. The Company has not, directly or indirectly, distributed and will not distribute any offering material in connection with the Offering other than any Preliminary Prospectus, the Prospectus and other materials, if any, permitted under the Securities Act and consistent with Section 3.2 below.

2.5 Changes After Dates in Registration Statement.

2.5.1. No Material Adverse Change. Since the respective dates as of which information is given in the Registration Statement, the Pricing Disclosure Package and the Prospectus, except as otherwise specifically stated therein: (i) there has been no material adverse change in the financial position or results of operations of the Company, nor any change or development that, singularly or in the aggregate, would involve a material adverse change in or affecting the condition (financial or otherwise), results of operations, business, assets or prospects of the Company (a "**Material Adverse Change**"); (ii) there have been no material transactions entered into by the Company, other than as contemplated pursuant to this Agreement; and (iii) no officer or director of the Company has resigned from any position with the Company.

2.5.2. Recent Securities Transactions, etc. Subsequent to the respective dates as of which information is given in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and except as may otherwise be indicated or contemplated herein or disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has not: (i) issued any securities, other than shares of Common Stock issuable upon the exercise or conversion of then outstanding options, warrants and/or convertible securities, or incurred any liability or obligation, direct or contingent, for borrowed money; or (ii) declared or paid any dividend or made any other distribution on or in respect to its capital stock.

2.6 Independent Accountants. To the knowledge of the Company, OUM & Co., LLP, (the " **Auditor**"), whose report is filed with the Commission and included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, is an independent registered public accounting firm as required by the Securities Act and the Securities Act Regulations and the Public Company Accounting Oversight Board. The Auditor has not, during the periods covered by the financial statements included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, provided to the Company any non-audit services, as such term is used in Section 10A(g) of the Exchange Act.

2.7 Disclosures in Commission Filings. Since September 1, 2015, (i) none of the Company's filings with the Commission contained any untrue statement of a material fact or omitted to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; and (ii) the Company has made all filings with the Commission required under the Exchange Act and the rules and regulations of the Commission promulgated thereunder (the "**Exchange Act Regulations**").

2.8 Financial Statements, etc. The financial statements, including the notes thereto and supporting schedules included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, fairly present in all material respects the financial position and the results of operations of the Company at the dates and for the periods to which they apply; and such financial statements have been prepared in conformity with U.S. generally accepted accounting principles ("**GAAP**"), consistently applied throughout the periods involved (provided that unaudited interim financial statements are subject to year-end audit adjustments that are not expected to be material in the aggregate and do not contain all footnotes required by GAAP); and the supporting schedules included in the Registration Statement, the Pricing Disclosure Package and the Prospectus present fairly the information required to be stated therein. Except as included or incorporated by reference therein, no historical or pro forma financial statements are required to be included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package or the Prospectus under the Securities Act or the Securities Act Regulations. The pro forma and pro forma as adjusted financial information and the related notes, if any, included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus have been properly compiled and prepared in accordance with the applicable requirements of the Securities Act and the Securities Act Regulations and present fairly the information shown therein, and the assumptions used in the preparation thereof are reasonable and the adjustments used therein are appropriate to give effect to the transactions and circumstances referred to therein. All disclosures contained in the Registration Statement, the Pricing Disclosure Package or the Prospectus regarding "non-GAAP financial measures" (as such term is defined by the rules and regulations of the Commission), if any, comply in all material respects with Regulation G of the Exchange Act and Item 10 of Regulation S-K of the Securities Act, to the extent applicable. Each of the Registration Statement, the Pricing Disclosure Package and the Prospectus discloses all material off-balance sheet transactions, arrangements, obligations (including contingent obligations), and other relationships of the Company with unconsolidated entities or other persons that may have a material current or future effect on the Company's financial condition, changes in financial condition, results of operations, liquidity, capital expenditures, capital resources, or significant components of revenues or expenses. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, (a) the Company has not incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions other than in the ordinary course of business, (b) the Company has not declared or paid any dividends or made any distribution of any kind with respect to its capital stock, (c) there has not been any change in the capital stock of the Company or, other than in the ordinary course of business, any grants under any stock compensation plan, and (d) there has not been any Material Adverse Change in the Company's long-term or short-term debt.

2.9 Authorized Capital; Options, etc. The Company had, at the date or dates indicated in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the duly authorized, issued and outstanding capitalization as set forth therein. Based on the assumptions stated in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company will have on the Closing Date the adjusted stock capitalization set forth therein. Except as set forth in, or contemplated by, the Registration Statement, the Pricing Disclosure Package and the Prospectus, on the Effective Date, as of the Applicable Time and on the Closing Date and any Option Closing Date, there will be no stock options, warrants, or other rights to purchase or otherwise acquire any authorized, but unissued shares of Common Stock of the Company or any security convertible or exercisable into shares of Common Stock of the Company, or any contracts or commitments to issue or sell shares of Common Stock or any such options, warrants, rights or convertible securities. The Company has no subsidiaries.

2.10 Valid Issuance of Securities, etc.

2.10.1. Outstanding Securities. All issued and outstanding securities of the Company issued prior to the transactions contemplated by this Agreement have been duly authorized and validly issued and are fully paid and non-assessable; the holders thereof have no rights of rescission with respect thereto, and are not subject to personal liability by reason of being such holders; and none of such securities were issued in violation of the preemptive rights of any holders of any security of the Company or similar contractual rights granted by the Company. The authorized shares of Common Stock conform in all material respects to all statements relating thereto contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus. The offers and sales of the outstanding shares of Common Stock were at all relevant times either registered under the Securities Act and the applicable state securities or "blue sky" laws or, based in part on the representations and warranties of the purchasers of such shares, exempt from such registration requirements. The description of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, accurately and fairly present, in all material respects, the information required to be shown with respect to such plans, arrangements, options and rights.

2.10.2. Securities Sold Pursuant to this Agreement. The Public Securities and the Representative's Securities have been duly authorized for issuance and sale and, when issued and paid for in accordance with their respective terms, will be validly issued, fully paid and non-assessable; the holders thereof are not and will not be subject to personal liability by reason of being such holders; the Public Securities and the Representative's Securities are not and will not be subject to the preemptive rights of any holders of any security of the Company or similar contractual rights granted by the Company; and all corporate action required to be taken for the authorization, issuance and sale of the Public Securities and the Representative's Securities has been duly and validly taken (or, with respect to the Preferred Stock, will have been taken prior to the Closing Date). The Public Securities and Representative's Securities conform in all material respects to all statements with respect thereto contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus. The Preferred Conversion Shares, the Warrant Shares and the Representative's Warrant Shares have been duly authorized and reserved for issuance by all necessary corporate action on the part of the Company and when paid for and issued in accordance with the Representative's Warrant and the Representative's Warrant Agreement or in accordance with the certificate of designation for the Preferred Stock or the terms of the Warrants and Warrant Agreement, as applicable, the Preferred Conversion Shares and the Warrant Shares, the Representative's Warrant Shares and shares of Common Stock, as applicable, will be validly issued, fully paid and non-assessable; the holders thereof are not and will not be subject to personal liability by reason of being such holders; and such shares of Common Stock, Preferred Conversion Shares, Warrant Shares and Representative's Warrant Shares are not and will not be subject to the preemptive rights of any holders of any security of the Company or similar contractual rights granted by the Company.

2.11 Registration Rights of Third Parties. Except as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus, no holders of any securities of the Company or any rights exercisable for or convertible or exchangeable into securities of the Company have the right to require the Company to register any such securities of the Company under the Securities Act or to include any such securities in a registration statement to be filed by the Company that have not been waived prior to the Effective Date.

2.12 Validity and Binding Effect of Agreements. This Agreement has been duly and validly authorized by the Company and constitutes the valid and binding agreements of the Company, enforceable against the Company in accordance with its terms, and the Warrant Agreement, the Warrants and the Representative's Warrant Agreement have been duly and validly authorized by the Company, and when executed and delivered, will constitute, the valid and binding agreements of the Company, enforceable against the Company in accordance with their respective terms, except in each case: (i) as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting creditors' rights generally; (ii) as enforceability of any indemnification or contribution provision may be limited under the federal and state securities laws; and (iii) that the remedy of specific performance and injunctive and other forms of equitable relief may be subject to the equitable defenses and to the discretion of the court before which any proceeding therefor may be brought.

2.13 No Conflicts, etc. The execution, delivery and performance by the Company of this Agreement, the Representative's Warrant Agreement, the Warrant Agreement, the Warrants and all ancillary documents related to this Offering, the consummation by the Company of the transactions herein and therein contemplated and the compliance by the Company with the terms hereof and thereof, do not and will not, with or without the giving of notice or the lapse of time or both: (i) result in a breach of, or conflict with any of the terms and provisions of, or constitute a material default under, or result in the creation, modification, termination or imposition of any lien, charge or encumbrance upon any property or assets of the Company pursuant to the terms of any agreement or instrument to which the Company is a party; (ii) result in any violation of the provisions of the Company's Amended and Restated Certificate of Incorporation (as the same may be amended or restated from time to time, the "**Charter**") or the by-laws of the Company; or (iii) result in a material violation of any existing applicable law, rule, regulation, judgment, order or decree of any Governmental Entity as of the date hereof (including, without limitation, those promulgated by the Food and Drug Administration of the U.S. Department of Health and Human Services (the "**FDA**") or by any foreign, federal, state or local regulatory authority performing functions similar to those performed by the FDA), except in the case of clause (i) above, for such breaches, conflicts or violations which would not reasonably be expected to have a Material Adverse Change.

2.14 No Defaults; Violations. No material default exists in the due performance and observance of any term, covenant or condition of any material license, contract, indenture, mortgage, deed of trust, note, loan or credit agreement, or any other agreement or instrument evidencing an obligation for borrowed money, or any other material agreement or instrument to which the Company is a party or by which the Company may be bound or to which any of the properties or assets of the Company is subject. The Company is not in violation of any term or provision of its Charter or by-laws, or in violation of any franchise, license, permit, applicable law, rule, regulation, judgment or decree of any Governmental Entity.

2.15 Corporate Power; Licenses; Consents.

2.15.1. Conduct of Business. Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has all requisite corporate power and authority, and has all necessary authorizations, approvals, orders, licenses, certificates and permits of and from all governmental regulatory officials and bodies that it needs as of the date hereof to conduct its business purpose in all material respects as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

2.15.2. Transactions Contemplated Herein. The Company has all corporate power and authority to enter into this Agreement, the Warrant Agreement, the Representative's Warrant Agreement and the Warrants and to carry out the provisions and conditions hereof and thereof, and all consents, authorizations, approvals and orders required in connection therewith have been obtained. No consent, authorization or order of, and no filing with, any court, government agency or other body is required for the valid issuance, sale and delivery of the Public Securities and the Representative's Securities and the consummation of the transactions and agreements contemplated by this Agreement, the Warrant Agreement, the Representative's Warrant Agreement and the Warrants and as contemplated by the Registration Statement, the Pricing Disclosure Package and the Prospectus, except with respect to applicable federal and state securities laws and the rules and regulations of the Financial Industry Regulatory Authority, Inc. ("**FINRA**").

2.16 D&O Questionnaires. To the Company's knowledge, all information contained in the questionnaires (the "**Questionnaires**") completed by each of the Company's directors and officers immediately prior to the Offering (the "**Insiders**") as supplemented by all information concerning the Company's directors, officers and principal shareholders as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, as well as in the Lock-Up Agreement (as defined in Section 2.26 below), provided to the Underwriters, is true and correct in all material respects and the Company has not become aware of any information which would cause the information disclosed in the Questionnaires to become materially inaccurate and incorrect.

2.17 Litigation; Governmental Proceedings. There is no action, suit, proceeding, inquiry, arbitration, investigation, litigation or governmental proceeding pending or, to the Company's knowledge, threatened against, or involving the Company or, to the Company's knowledge, any executive officer or director, including any proceeding before the FDA or comparable federal, state, local or foreign governmental bodies (it being understood that the interaction between the Company and the FDA and such comparable governmental bodies relating to the clinical development and product approval process shall not be deemed proceedings for purposes of this representation), which has not been disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus which is required to be disclosed.

2.18 Good Standing. The Company has been duly organized and is validly existing as a corporation and is in good standing under the laws of the State of Delaware as of the date hereof, and is duly qualified to do business and is in good standing in each other jurisdiction in which its ownership or lease of property or the conduct of business requires such qualification, except where the failure to qualify, singularly or in the aggregate, would not have or reasonably be expected to result in a Material Adverse Change.

2.19 Insurance. The Company carries or is entitled to the benefits of insurance, with reputable insurers, in such amounts and covering such risks which the Company believes are adequate, and all such insurance is in full force and effect. The Company has no reason to believe that it will not be able (i) to renew its existing insurance coverage as and when such policies expire or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that would not result in a Material Adverse Change.

2.20 Transactions Affecting Disclosure to FINRA.

2.20.1. Finder's Fees. Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there are no claims, payments, arrangements, agreements or understandings relating to the payment of a finder's, consulting or origination fee by the Company or any Insider with respect to the sale of the Public Securities hereunder or any other arrangements, agreements or understandings of the Company or, to the Company's knowledge, any of its stockholders that may affect the Underwriters' compensation, as determined by FINRA.

2.20.2. Payments Within Twelve (12) Months. Except as described in the Registration Statement, the Pricing Disclosure Package, or the Prospectus, the Company has not made any direct or indirect payments (in cash, securities or otherwise) to: (i) any person, as a finder's fee, consulting fee or otherwise, in consideration of such person raising capital for the Company or introducing to the Company persons who raised or provided capital to the Company; (ii) any FINRA member; or (iii) any person or entity that has any direct or indirect affiliation or association with any FINRA member, within the twelve (12) months prior to the date of this Agreement, other than the payment to the Underwriters as provided hereunder in connection with the Offering.

2.20.3. Use of Proceeds. None of the net proceeds of the Offering will be paid by the Company to any participating FINRA member or its affiliates, except as specifically authorized herein.

2.20.4. FINRA Affiliation. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there is no (i) officer or director of the Company, or, to the Company's knowledge, (ii) beneficial owner of 5% or more of any class of the Company's securities or (iii) beneficial owner of the Company's unregistered equity securities that were acquired during the 180-day period immediately preceding the filing of the Registration Statement that is an affiliate or associated person of a FINRA member participating in the Offering (as determined in accordance with the rules and regulations of FINRA).

2.20.5. Information. All information provided by the Company in its FINRA questionnaire to Representative Counsel specifically for use by Representative Counsel in connection with its Public Offering System filings (and related disclosure) with FINRA is true, correct and complete in all material respects.

2.21 Foreign Corrupt Practices Act. To the Company's knowledge, no director, officer, agent, employee or affiliate of the Company or any other person acting on behalf of the Company has, directly or indirectly, given or agreed to give any money, gift or similar benefit (other than legal price concessions to customers in the ordinary course of business) to any customer, supplier, employee or agent of a customer or supplier, or official or employee of any governmental agency or instrumentality of any government (domestic or foreign) or any political party or candidate for office (domestic or foreign) or other person who was, is, or may be in a position to help or hinder the business of the Company (or assist it in connection with any actual or proposed transaction) that (i) might subject the Company to any damage or penalty in any civil, criminal or governmental litigation or proceeding, (ii) if not given in the past, might have had a Material Adverse Change or (iii) if not continued in the future, might adversely affect the assets, business, operations or prospects of the Company. The Company has taken reasonable steps to ensure that its accounting controls and procedures are sufficient to cause the Company to comply in all material respects with the Foreign Corrupt Practices Act of 1977, as amended.

2.22 Compliance with OFAC. To the Company's knowledge, no director, officer, agent, employee or affiliate of the Company or any other person acting on behalf of the Company, is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Department of the Treasury ("**OFAC**"), and the Company will not, directly or indirectly, use the proceeds of the Offering hereunder, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

2.23 Money Laundering Laws. The operations of the Company are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any Governmental Entity (collectively, the "**Money Laundering Laws**"); and no action, suit or proceeding by or before any Governmental Entity involving the Company with respect to the Money Laundering Laws is pending or, to the best knowledge of the Company, threatened.

2.24 Regulatory Matters; Compliance. To the Company's knowledge, the Company and each of its directors, officers, employees and agents, is and has been in material compliance with applicable health care laws, including, to the extent applicable, without limitation, the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 301 et seq.), the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the civil False Claims Act (31 U.S.C. § 3729 et seq.), the criminal False Claims Law (42 U.S.C. § 1320a-7b(a)), the Civil Monetary Penalties Law (42 U.S.C. § 1320a-7a), the Health Insurance Portability and Accountability Act of 1996 (42 U.S.C. § 1320d et seq.), as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (42 U.S.C. § 17921 et seq.), the exclusion laws (42 U.S.C. § 1320a-7), Medicare (Title XVIII of the Social Security Act), Medicaid (Title XIX of the Social Security Act), and the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Affordability Reconciliation Act of 2010, including without limitation the Physician Payments Sunshine Act (42 U.S.C. § 1320a-7h), and the regulations promulgated pursuant to such laws, and comparable state laws (collectively, the "**Health Care Laws**"). The Company has not received notice of any ongoing claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any governmental authority or third party alleging that any product operation or activity is in material violation of any Health Care Laws. The Company has filed, obtained, maintained or submitted all reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments thereto as required by any Health Care Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete, correct and not misleading on the date filed (or were corrected or supplemented by a subsequent submission). To the Company's knowledge, the manufacturing facilities and operations of its suppliers are in compliance in all material respects with all applicable statutes, rules, and regulations of the FDA and comparable regulatory agencies outside of the United States to which the Company or its contractors and supplies are subject. The Company is not distributing or promoting any product in a way that would violate the advertising and promotional requirements of the FDA or any other federal, state or foreign regulatory authority, including the FDA's current regulations and policies related to "off-label" marketing and promotion of prescription drugs and medical devices, consistent with the current scope of the Company's marketing authorization and product labeling.

2.25 Officers' Certificate. Any certificate signed by any duly authorized officer of the Company and delivered to you or to Representative Counsel shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby.

2.26 Lock-Up Agreements. Schedule 3 hereto contains a complete and accurate list of the Company's officers, directors, each owner of at least 5% of the Company's outstanding shares of Common Stock (or securities convertible or exercisable into shares of Common Stock) and such other parties as mutually agreed upon by the Company and the Representative (collectively, the "**Lock-Up Parties**"). The Company has caused each of the Lock-Up Parties to deliver to the Representative an executed Lock-Up Agreement, in the form attached hereto as Exhibit B (the "**Lock-Up Agreement**"), prior to the execution of this Agreement.

2.27 Subsidiaries. The Company has no direct or indirect subsidiaries.

2.28 Related Party Transactions.

2.28.1. Business Relationships. There are no business relationships or related party transactions involving the Company or any other person required to be described in the Registration Statement, the Pricing Disclosure Package and the Prospectus that have not been described as required.

2.28.2. No Relationships with Customers and Suppliers. No relationship, direct or indirect, exists between or among the Company, on the one hand, and the directors, officers, stockholders, customers or suppliers of the Company, or any of the Company's affiliates, on the other hand, which is required to be described in the Pricing Disclosure Package and the Prospectus or a document incorporated by reference therein and which is not so described.

2.28.3. No Unconsolidated Entities. There are no transactions, arrangements or other relationships between and/or among the Company, or any of its affiliates (as such term is defined in Rule 405 of the Securities Act) and any unconsolidated entity, including, but not limited to, any structured finance, special purpose or limited purpose entity that could reasonably be expected to materially affect the Company's liquidity or the availability of or requirements for its capital resources required to be described in the Pricing Disclosure Package and the Prospectus or a document incorporated by reference therein which have not been described as required.

2.28.4. No Loans or Advances to Affiliates. There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of their respective family members, except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

2.29 Board of Directors. The Board of Directors of the Company is comprised of the persons set forth under the heading of the Pricing Prospectus and the Prospectus captioned "Management." The qualifications of the persons serving as board members and the overall composition of the board comply with the Exchange Act, the Exchange Act Regulations, the Sarbanes-Oxley Act of 2002 and the rules promulgated thereunder (the "**Sarbanes-Oxley Act**") applicable to the Company and the listing rules of the Exchange. At least one member of the Audit Committee of the Board of Directors of the Company qualifies as an "audit committee financial expert," as such term is defined under Regulation S-K and the listing rules of the Exchange. In addition, at least a majority of the persons serving on the Board of Directors qualify as "independent," as defined under the listing rules of the Exchange.

2.30 Sarbanes-Oxley Compliance.

2.30.1. Disclosure Controls. The Company has developed and currently maintains disclosure controls and procedures that will comply with Rule 13a-15 or 15d-15 under the Exchange Act Regulations, and such controls and procedures are effective to ensure that all material information concerning the Company will be made known on a timely basis to the individuals responsible for the preparation of the Company's Exchange Act filings and other public disclosure documents.

2.30.2. Compliance. The Company is, or at the Applicable Time and on the Closing Date will be, in material compliance with the provisions of the Sarbanes-Oxley Act applicable to it, and has implemented or will implement such programs and taken reasonable steps to ensure the Company's future compliance (not later than the relevant statutory and regulatory deadlines therefor) with all of the material provisions of the Sarbanes-Oxley Act.

2.31 Accounting Controls. The Company maintains systems of "internal control over financial reporting" (as defined under Rules 13a-15 and 15d-15 under the Exchange Act Regulations) that comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, their respective principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, including, but not limited to, internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company is not aware of any material weaknesses in its internal controls. The Company's auditors and the Audit Committee of the Board of Directors of the Company have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are known to the Company's management and that have adversely affected or are reasonably likely to adversely affect the Company' ability to record, process, summarize and report financial information; and (ii) any fraud known to the Company's management, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting.

2.32 No Investment Company Status. The Company is not and, after giving effect to the Offering and the application of the proceeds thereof as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, will not be, required to register as an "investment company," as defined in the Investment Company Act of 1940, as amended.

2.33 No Labor Disputes. No labor dispute with the employees of the Company exists or, to the knowledge of the Company, is imminent. The Company is not aware that any key employee or significant group of employees of the Company plans to terminate employment with the Company.

2.34 Intellectual Property Rights. The Company owns or possesses or has valid rights to use all patents, patent applications, trademarks, service marks, trade names, trademark registrations, service mark registrations, copyrights, licenses, inventions, trade secrets and similar rights ("**Intellectual Property Rights**") necessary for the conduct of the business of the Company as currently carried on and as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus. To the knowledge of the Company, no action or use by the Company necessary for the conduct of its business as currently carried on and as described in the Registration Statement and the Prospectus will involve or give rise to any infringement of, or license or similar fees for, any Intellectual Property Rights of others. The Company has not received any notice alleging any such infringement, fee or conflict with asserted Intellectual Property Rights of others. Except as would not reasonably be expected to result, individually or in the aggregate, in a Material Adverse Change (A) to the knowledge of the Company, there is no infringement, misappropriation or violation by third parties of any of the Intellectual Property Rights owned by the Company; (B) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the rights of the Company in or to any such Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim, that would, individually or in the aggregate, together with any other claims in this Section 2.34, reasonably be expected to result in a Material Adverse Change; (C) the Intellectual Property Rights owned by the Company and, to the knowledge of the Company, the Intellectual Property Rights licensed to the Company have not been adjudged by a court of competent jurisdiction invalid or unenforceable, in whole or in part, and there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim that would, individually or in the aggregate, together with any other claims in this Section 2.34, reasonably be expected to result in a Material Adverse Change; (D) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others that the Company infringes, misappropriates or otherwise violates any Intellectual Property Rights or other proprietary rights of others, the Company has not received any written notice of such claim and the Company is unaware of any other facts which would form a reasonable basis for any such claim that would, individually or in the aggregate, together with any other claims in this Section 2.34, reasonably be expected to result in a Material Adverse Change; and (E) to the Company's knowledge, no employee of the Company is in or has ever been in violation in any material respect of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company, or actions undertaken by the employee while employed with the Company and could reasonably be expected to result, individually or in the aggregate, in a Material Adverse Change. To the Company's knowledge, all material technical information developed by and belonging to the Company which has not been patented has been kept confidential. The Company is not a party to or bound by any options, licenses or agreements with respect to the Intellectual Property Rights of any other person or entity that are required to be set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus and are not described therein. The Registration Statement, the Pricing Disclosure Package and the Prospectus contain in all material respects the same description of the matters set forth in the preceding sentence. None of the technology employed by the Company has been obtained or is being used by the Company in violation of any contractual obligation binding on the Company or, to the Company's knowledge, any of its officers, directors or employees, or otherwise in violation of the rights of any persons.

2.35 Taxes. The Company has filed all returns (as hereinafter defined) required to be filed with taxing authorities prior to the date hereof or has duly obtained extensions of time for the filing thereof. The Company has paid all taxes (as hereinafter defined) shown as due on such returns that were filed and has paid all taxes imposed on or assessed against the Company. The provisions for taxes payable, if any, shown on the financial statements filed with or as part of the Registration Statement are sufficient for all accrued and unpaid taxes, whether or not disputed, and for all periods to and including the dates of such consolidated financial statements. Except as disclosed in writing to the Underwriters, (i) no issues have been raised (and are currently pending) by any taxing authority in connection with any of the returns or taxes asserted as due from the Company, and (ii) no waivers of statutes of limitation with respect to the returns or collection of taxes have been given by or requested from the Company. There are no tax liens against the assets, properties or business of the Company. The term "taxes" means all federal, state, local, foreign and other net income, gross income, gross receipts, sales, use, ad valorem, transfer, franchise, profits, license, lease, service, service use, withholding, payroll, employment, excise, severance, stamp, occupation, premium, property, windfall profits, customs, duties or other taxes, fees, assessments or charges of any kind whatever, together with any interest and any penalties, additions to tax or additional amounts with respect thereto. The term "returns" means all returns, declarations, reports, statements and other documents required to be filed in respect to taxes.

2.36 ERISA Compliance. The Company and any "employee benefit plan" (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, "**ERISA**")) established or maintained by the Company or its "ERISA Affiliates" (as defined below) are in compliance in all material respects with ERISA. "**ERISA Affiliate**" means, with respect to the Company, any member of any group of organizations described in Sections 414(b), (c),(m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (the "**Code**") of which the Company is a member. No "reportable event" (as defined under ERISA) has occurred or is reasonably expected to occur with respect to any "employee benefit plan" established or maintained by the Company or any of its ERISA Affiliates. No "employee benefit plan" established or maintained by the Company or any of its ERISA Affiliates, if such "employee benefit plan" were terminated, would have any "amount of unfunded benefit liabilities" (as defined under ERISA). Neither the Company nor any of its ERISA Affiliates has incurred or reasonably expects to incur any material liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any "employee benefit plan" or (ii) Sections 412, 4971, 4975 or 4980B of the Code. Each "employee benefit plan" established or maintained by the Company or any of its ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code is so qualified and, to the knowledge of the Company, nothing has occurred, whether by action or failure to act, which would cause the loss of such qualification.

2.37 Licenses or Permits. The Company possesses all licenses, certificates, registrations, authorizations and permits required by the FDA and other governmental or regulatory authorities performing functions similar to those performed by the FDA and have made all declarations and filings with, the appropriate local, state, federal or foreign governmental or regulatory agencies or bodies (including, without limitation, those administered by the FDA or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA) that are necessary for the ownership or lease of their respective properties or the conduct of their respective businesses as described in the Pricing Disclosure Package and the Prospectus (collectively, the "**Governmental Permits**") except where any failures to possess or make the same would not, singularly or in the aggregate, have a Material Adverse Change. The Company is in compliance with all such Governmental Permits, including with all conditions and limitations on the commercial rights granted by such Governmental Permits; all such Governmental Permits are valid and in full force and effect, except where the validity or failure to be in full force and effect would not, singularly or in the aggregate, have a Material Adverse Change. The Company has not received notification of any revocation, modification, suspension, termination or invalidation (or proceedings related thereto) of any such Governmental Permit and the Company has no reason to believe that any such Governmental Permit will not be renewed.

2.38 Compliance with Laws. The Company: (A) is and at all times has been in compliance in all material respects with all statutes, rules, or regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured or distributed by the Company ("**Applicable Laws**"), except as could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Change; (B) has not received any warning letter, untitled letter or other correspondence or notice from any governmental authority alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**");(C) possesses all material Authorizations and such Authorizations are valid and in full force and effect and are not in material violation of any term of any such Authorizations; (D) has not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any governmental authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations and has no knowledge that any such governmental authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (E) has not received notice that any governmental authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations and has no knowledge that any such governmental authority is considering such action; and (F) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct in all material respects on the date filed (or were corrected or supplemented by a subsequent submission).

2.39 Information Technology. The Company's information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "**IT Systems**") are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company as currently conducted, and to the knowledge of the Company are free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. The Company has implemented and maintained commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data (including all personal, personally identifiable, sensitive, confidential or regulated data ("**Personal Data**")) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company is presently in material compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification. The Company has taken all necessary actions to comply with the European Union General Data Protection Regulation and all other applicable laws and regulations with respect to Personal Data that have been announced as of the date hereof as becoming effective within 12 months after the date hereof, and for which any non-compliance with same would be reasonably likely to create a material liability.

2.40 Environmental Laws. The Company is in compliance with all foreign, federal, state and local rules, laws and regulations relating to the use, treatment, storage and disposal of hazardous or toxic substances or waste and protection of health and safety or the environment which are applicable to its business ("**Environmental Laws**"), except where the failure to comply would not, singularly or in the aggregate, result in a Material Adverse Change. There has been no storage, generation, transportation, handling, treatment, disposal, discharge, emission, or other release of any kind of toxic or other wastes or other hazardous substances by, due to, or caused by the Company (or, to the Company's knowledge, any other entity for whose acts or omissions the Company is or may otherwise be liable) upon any of the property now or previously owned or leased by the Company, or upon any other property, in violation of any law, statute, ordinance, rule, regulation, order, judgment, decree or permit or which would, under any law, statute, ordinance, rule (including rule of common law), regulation, order, judgment, decree or permit, give rise to any liability, except for any violation or liability which would not have, singularly or in the aggregate with all such violations and liabilities, a Material Adverse Change; and there has been no disposal, discharge, emission or other release of any kind onto such property or into the environment surrounding such property of any toxic or other wastes or other hazardous substances with respect to which the Company has knowledge, except for any such disposal, discharge, emission, or other release of any kind which would not have, singularly or in the aggregate with all such discharges and other releases, a Material Adverse Change. In the ordinary course of business, the Company conducts periodic reviews of the effect of Environmental Laws on its business and assets, in the course of which it identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws or governmental permits issued thereunder, any related constraints on operating activities and any potential liabilities to third parties). On the basis of such reviews, the Company has reasonably concluded that such associated costs and liabilities would not have, singularly or in the aggregate, a Material Adverse Change.

2.41 Real Property. Except as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has good and marketable title in fee simple to, or has valid rights to lease or otherwise use, all items of real or personal property which are material to the business of the Company, in each case free and clear of all liens, encumbrances, security interests, claims and defects that do not, singly or in the aggregate, materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company; and all of the leases and subleases material to the business of the Company, and under which the Company holds properties described in the Registration Statement, the Disclosure Package and the Prospectus, are in full force and effect, and the Company has not received any notice of any material claim of any sort that has been asserted by anyone adverse to the rights of the Company under any of the leases or subleases mentioned above, or affecting or questioning the rights of the Company to the continued possession of the leased or subleased premises under any such lease or sublease, which would result in a Material Adverse Change.

2.42 Contracts Affecting Capital. There are no transactions, arrangements or other relationships between and/or among the Company, any of its affiliates (as such term is defined in Rule 405 of the Securities Act Regulations) and any unconsolidated entity, including, but not limited to, any structured finance, special purpose or limited purpose entity that could reasonably be expected to materially affect the Company's liquidity or the availability of or requirements for its capital resources required to be described or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus which have not been described or incorporated by reference as required.

2.43 Loans to Directors or Officers. There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness by the Company to or for the benefit of any of the officers or directors of the Company, or any of their respective family members, except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

2.44 Ineligible Issuer. At the time of filing the Registration Statement and any post-effective amendment thereto, at the time of effectiveness of the Registration Statement and any amendment thereto, at the earliest time thereafter that the Company or another offering participant made a *bona fide* offer (within the meaning of Rule 164(h)(2) of the Securities Act Regulations) of the Securities and at the date hereof, the Company was not and is not an "ineligible issuer," as defined in Rule 405, without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an ineligible issuer.

2.45 Non-accelerated Filer. As of the time of filing of the Registration Statement, the Company was a "Non-accelerated Filer," as defined in Rule 12b-2 of the Exchange Act Regulations.

2.46 Industry Data. The statistical and market-related data included in each of the Registration Statement, the Pricing Disclosure Package and the Prospectus are based on or derived from sources that the Company reasonably and in good faith believes are reliable and accurate or represent the Company's good faith estimates that are made on the basis of data derived from such sources.

2.47 Margin Securities. The Company owns no "margin securities" as that term is defined in Regulation U of the Board of Governors of the Federal Reserve System (the "**Federal Reserve Board**"), and none of the proceeds of Offering will be used, directly or indirectly, for the purpose of purchasing or carrying any margin security, for the purpose of reducing or retiring any indebtedness which was originally incurred to purchase or carry any margin security or for any other purpose which might cause any of the shares of Common Stock to be considered a "purpose credit" within the meanings of Regulation T, U or X of the Federal Reserve Board.

2.48 Forward-Looking Statements. No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) contained in the Registration Statement, the Pricing Disclosure Package or the Prospectus has been made or reaffirmed by the Company without a reasonable basis or has been disclosed by the Company other than in good faith.

2.49 Integration. Neither the Company, nor any of its affiliates, nor any person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause the Offering to be integrated with prior offerings by the Company for purposes of the Securities Act that would require the registration of any such securities under the Securities Act.

2.50 Confidentiality and Non-Competitions. To the Company's knowledge, no director, officer, key employee or consultant of the Company is subject to any confidentiality, non-disclosure, non-competition agreement or non-solicitation agreement with any employer or prior employer that could reasonably be expected to materially affect his ability to be and act in his respective capacity of the Company or be expected to result in a Material Adverse Change.

2.51 Minute Books. The minute books of the Company have been made available to the Underwriters and counsel for the Underwriters, and such books (i) contain a complete summary of all meetings and actions of the board of directors (including each board committee) and stockholders of the Company (or analogous governing bodies and interest holders, as applicable), since the time of its incorporation or organization through the date of the latest meeting and action, and (ii) accurately in all material respects reflect all transactions referred to in such minutes. There are no material transactions, agreements, dispositions or other actions of the Company that are not properly approved and/or accurately and fairly recorded in the minute books of the Company, as applicable.

2.52 Stabilization. Neither the Company nor, to its knowledge, any of its employees, directors or stockholders (without the consent of the Representative) has taken, directly or indirectly, any action designed to or that has constituted or that might reasonably be expected to cause or result in, under Regulation M of the Exchange Act, or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Public Securities.

3. Covenants of the Company. The Company covenants and agrees as follows:

3.1 Amendments to Registration Statement. The Company shall deliver to the Representative, prior to filing, any amendment or supplement to the Registration Statement or Prospectus proposed to be filed after the Effective Date and not file any such amendment or supplement to which the Representative shall reasonably object in writing.

3.2 Federal Securities Laws.

3.2.1. Compliance. The Company, subject to Section 3.2.2, shall comply with the requirements of Rule 430A of the Securities Act Regulations, and will notify the Representative promptly, and confirm the notice in writing, (i) when any post-effective amendment to the Registration Statement shall become effective or any amendment or supplement to the Prospectus shall have been filed; (ii) of the receipt of any comments from the Commission; (iii) of any request by the Commission for any amendment to the Registration Statement or any amendment or supplement to the Prospectus or for additional information; (iv) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or any post-effective amendment or of any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus, or of the suspension of the qualification of the Public Securities and Representative's Securities for offering or sale in any jurisdiction, or of the initiation or threatening of any proceedings for any of such purposes or of any examination pursuant to Section 8(d) or 8(e) of the Securities Act concerning the Registration Statement and (v) if the Company becomes the subject of a proceeding under Section 8A of the Securities Act in connection with the Offering of the Public Securities and Representative's Securities. The Company shall effect all filings required under Rule 424(b) of the Securities Act Regulations, in the manner and within the time period required by Rule 424(b) (without reliance on Rule 424(b)(8)), and shall take such steps as it deems necessary to ascertain promptly whether the form of prospectus transmitted for filing under Rule 424(b) was received for filing by the Commission and, in the event that it was not, it will promptly file such prospectus. The Company shall use its best efforts to prevent the issuance of any stop order, prevention or suspension and, if any such order is issued, to obtain the lifting thereof at the earliest possible moment.

3.2.2. Continued Compliance. The Company shall comply with the Securities Act, the Securities Act Regulations, the Exchange Act and the Exchange Act Regulations so as to permit the completion of the distribution of the Public Securities as contemplated in this Agreement and in the Registration Statement, the Pricing Disclosure Package and the Prospectus. If at any time when a prospectus relating to the Public Securities is (or, but for the exception afforded by Rule 172 of the Securities Act Regulations ("**Rule 172**"), would be) required by the Securities Act to be delivered in connection with sales of the Public Securities, any event shall occur or condition shall exist as a result of which it is necessary, in the opinion of counsel for the Underwriters or for the Company, to (i) amend the Registration Statement in order that the Registration Statement will not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; (ii) amend or supplement the Pricing Disclosure Package or the Prospectus in order that the Pricing Disclosure Package or the Prospectus, as the case may be, will not include any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein not misleading in light of the circumstances existing at the time it is delivered to a purchaser or (iii) amend the Registration Statement or amend or supplement the Pricing Disclosure Package or the Prospectus, as the case may be, in order to comply with the requirements of the Securities Act or the Securities Act Regulations, the Company will promptly (A) give the Representative notice of such event; (B) prepare any amendment or supplement as may be necessary to correct such statement or omission or to make the Registration Statement, the Pricing Disclosure Package or the Prospectus comply with such requirements and, a reasonable amount of time prior to any proposed filing or use, furnish the Representative with copies of any such amendment or supplement and (C) file with the Commission any such amendment or supplement; provided that the Company shall not file or use any such amendment or supplement to which the Representative or counsel for the Underwriters shall reasonably object. The Company will furnish to the Underwriters such number of copies of such amendment or supplement as the Underwriters may reasonably request. The Company has given the Representative notice of any filings made pursuant to the Exchange Act or the Exchange Act Regulations within 48 hours prior to the Applicable Time. The Company shall give the Representative notice of its intention to make any such filing from the Applicable Time until the later of the Closing Date and the exercise in full or expiration of the Option specified in Section 1.2 hereof and will furnish the Representative with copies of the related document(s) a reasonable amount of time prior to such proposed filing, as the case may be, and will not file or use any such document to which the Representative or counsel for the Underwriters shall reasonably object.

3.2.3. Exchange Act Registration. For a period of three (3) years after the date of this Agreement, the Company shall use its best efforts to maintain the registration of the shares of Common Stock under the Exchange Act. For a period of three (3) years after the date of this Agreement, the Company shall not deregister the shares of Common Stock under the Exchange Act without the prior written consent of the Representative, which consent shall not be unreasonably withheld. Nothing in this Section 3.2.3, however, shall prevent a sale, merger or similar transaction involving the Company.

3.2.4. Free Writing Prospectuses. The Company agrees that, unless it obtains the prior written consent of the Representative, it shall not make any offer relating to the Public Securities that would constitute an Issuer Free Writing Prospectus or that would otherwise constitute a "free writing prospectus," or a portion thereof, required to be filed by the Company with the Commission or retained by the Company under Rule 433; provided that the Representative shall be deemed to have consented to each Issuer General Use Free Writing Prospectus hereto and any "road show that is a written communication" within the meaning of Rule 433(d)(8)(i) that has been reviewed by the Representative. The Company represents that it has treated or agrees that it will treat each such free writing prospectus consented to, or deemed consented to, by the Underwriters as an "issuer free writing prospectus," as defined in Rule 433, and that it has complied and will comply with the applicable requirements of Rule 433 with respect thereto, including timely filing with the Commission where required, legending and record keeping. If at any time following issuance of an Issuer Free Writing Prospectus there occurred or occurs an event or development as a result of which such Issuer Free Writing Prospectus conflicted or would conflict with the information contained in the Registration Statement or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances existing at that subsequent time, not misleading, the Company will promptly notify the Underwriters and will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission.

3.3 Delivery to the Underwriters of Registration Statements. The Company has delivered or made available or shall deliver or make available to the Representative and counsel for the Representative, without charge, signed copies of the Registration Statement as originally filed and each amendment thereto (including exhibits filed therewith) and signed copies of all consents and certificates of experts, and will also deliver to the Underwriters, without charge, a conformed copy of the Registration Statement as originally filed and each amendment thereto (without exhibits) for each of the Underwriters. The copies of the Registration Statement and each amendment thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

3.4 Delivery to the Underwriters of Prospectuses. The Company has delivered or made available or will deliver or make available to each Underwriter, without charge, as many copies of each Preliminary Prospectus as such Underwriter reasonably requested, and the Company hereby consents to the use of such copies for purposes permitted by the Securities Act. The Company will furnish to each Underwriter, without charge, during the period when a prospectus relating to the Public Securities is (or, but for the exception afforded by Rule 172, would be) required to be delivered under the Securities Act, such number of copies of the Prospectus (as amended or supplemented) as such Underwriter may reasonably request. The Prospectus and any amendments or supplements thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

3.5 Effectiveness and Events Requiring Notice to the Representative. The Company shall notify the Representative immediately and confirm the notice in writing: (i) of the effectiveness of any post-effective amendment to the Registration Statement; (ii) of the issuance by the Commission of any stop order or of the initiation, or the threatening, of any proceeding for that purpose; (iii) of the issuance by any state securities commission of any proceedings for the suspension of the qualification of the Public Securities for offering or sale in any jurisdiction or of the initiation, or the threatening, of any proceeding for that purpose; (iv) of the mailing and delivery to the Commission for filing of any amendment or supplement to the Registration Statement or Prospectus; (v) of the receipt of any comments or request for any additional information from the Commission; and (vi) of the happening of any event during the period described in this Section 3.5 that, in the judgment of the Company, makes any statement of a material fact made in the Registration Statement, the Pricing Disclosure Package or the Prospectus untrue or that requires the making of any changes in (a) the Registration Statement in order to make the statements therein not misleading, or (b) in the Pricing Disclosure Package or the Prospectus in order to make the statements therein, in light of the circumstances under which they were made, not misleading. If the Commission or any state securities commission shall enter a stop order or suspend such qualification at any time, the Company shall make every reasonable effort to obtain promptly the lifting of such order.

3.6 Review of Financial Statements. For a period of three (3) years after the date of this Agreement, the Company, at its expense, shall cause its regularly engaged independent registered public accounting firm to review (but not audit) the Company's financial statements for each of the three fiscal quarters immediately preceding the announcement of any quarterly financial information, provided that such provision shall not prevent a sale, merger or similar transaction involving the Company.

3.7 Listing. The Company shall use its commercially reasonable best efforts to maintain the listing of the shares of Common Stock (including the shares of Common Stock included in the Public Securities, the Preferred Conversion Shares, the Warrant Shares and the Representative's Warrant Shares) on the Exchange for at least three years from the date of this Agreement. Nothing in this Section 3.7, however, shall prevent a sale, merger or similar transaction involving the Company.

3.8 Financial Public Relations Firm. As of the Effective Date, the Company shall have retained a financial public relations firm reasonably acceptable to the Representative and the Company, which shall initially be Kilmer Lucas, which firm is experienced in assisting issuers in their relations with their security holders, and shall retain such firm or another firm reasonably acceptable to the Representative for a period of not less than two (2) years after the Effective Date.

3.9 Reports to the Representative.

3.9.1. Periodic Reports, etc. For a period of two (2) years after the date of this Agreement, the Company shall furnish or make available to the Representative upon request copies of such financial statements and other periodic and special reports as the Company from time to time furnishes generally to holders of any class of its securities and also promptly furnish to the Representative: (i) a copy of each periodic report the Company shall be required to file with the Commission under the Exchange Act and the Exchange Act Regulations; (ii) a copy of every press release and every news item and article with respect to the Company or its affairs which was released by the Company; (iii) a copy of each Form 8-K prepared and filed by the Company; (iv) five copies of each registration statement filed by the Company under the Securities Act; and (v) such additional documents and information with respect to the Company and the affairs of any future subsidiaries of the Company as the Representative may from time to time reasonably request; provided the Representative shall sign, if requested by the Company, a Regulation FD compliant confidentiality agreement which is reasonably acceptable to the Representative and Representative Counsel in connection with the Representative's receipt of such information. Documents filed with the Commission pursuant to its EDGAR system shall be deemed to have been delivered to the Representative pursuant to this Section 3.9.1.

3.9.2. Transfer Agent; Transfer Sheets. For a period of three (3) years after the date of this Agreement, the Company shall retain a transfer agent and registrar acceptable to the Representative (the "**Transfer Agent**") and shall furnish to the Representative at the Company's sole cost and expense such transfer sheets of the Company's securities as the Representative may reasonably request, including the daily and monthly consolidated transfer sheets of the Transfer Agent and DTC. Continental Stock Transfer & Trust Company is acceptable to the Representative to act as Transfer Agent for the shares of Common Stock.

3.9.3. Warrant Agent. For so long as the Warrants are outstanding, the Company shall retain a warrant agent for the Warrants reasonably acceptable to the Representative (the "**Warrant Agent**"). Continental Stock Transfer & Trust Company is acceptable to the Representative to act as Warrant Agent for the Warrants.

3.9.4. Trading Reports. During such time as the shares of Common Stock included in the Public Securities, the Preferred Conversion Shares, the Representative's Warrant Shares and the Warrant Shares are listed on the Exchange, the Company shall provide to the Representative, at the Company's expense, such reports published by Exchange relating to price trading of the Common Stock, as the Representative shall reasonably request.

3.10 Payment of Expenses.

3.10.1. General Expenses Related to the Offering. The Company hereby agrees to pay on the Closing Date all expenses incident to the performance of the obligations of the Company under this Agreement, including, but not limited to: (a) all filing fees and communication expenses relating to the registration of the Public Securities and Representative's Securities to be sold in the Offering with the Commission; (b) all Public Filing System filing fees associated with the review of the Offering by FINRA; (c) all fees and expenses relating to the listing of the shares of Common Stock included in the Public Securities and the Representative's Warrant Shares on the Exchange and such other stock exchanges as the Company and the Representative together determine; (d) all fees, expenses and disbursements relating to the registration, qualification or exemption of the Public Securities and Representative's Warrant Shares under the securities laws of such foreign jurisdictions as the Representative may reasonably designate; (e) the costs of all mailing and printing of the underwriting documents (including, without limitation, the Underwriting Agreement, the Warrant Agreement, the Warrant, any Blue Sky Surveys and, if appropriate, any Agreement Among Underwriters, Selected Dealers' Agreement, Underwriters' Questionnaire and Power of Attorney), Registration Statements, prospectuses and all amendments, supplements and exhibits thereto and as many preliminary and final prospectuses as the Representative may reasonably deem necessary; (g) the costs of preparing, printing and delivering certificates representing the Public Securities and Representative's Warrant Shares; (h) fees and expenses of the transfer agent for the shares of Common Stock and the Preferred Stock and the Warrant Agent for the Warrants; (i) stock transfer and/or stamp taxes, if any, payable upon the transfer of securities from the Company to the Underwriters; (j) the fees and expenses of the Company's accountants; (k) the fees and expenses of the Company's legal counsel and other agents and representatives; and (l) up to $120,000 for out of pocket expenses incurred by the Representative including $70,000 for legal fees of the Representative, $15,000 for IPREO software related expenses, $6,000 for background check(s) expenses, $2,000 for tombstones and up to $27,000 in marketing related expenses, including roadshow expenses if they are incurred by the Representative. The Representative may deduct from the net proceeds of the Offering payable to the Company on the Closing Date, or the Option Closing Date, if any, the expenses set forth herein to be paid by the Company to the Underwriters.

3.11 Application of Net Proceeds. The Company shall apply the net proceeds from the Offering received by it in a manner consistent with the application thereof described under the caption "Use of Proceeds" in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

3.12 Delivery of Earnings Statements to Security Holders. The Company shall make generally available to its security holders as soon as practicable, but not later than the first day of the fifteenth (15th) full calendar month following the date of this Agreement, an earnings statement (which need not be certified by an independent registered public accounting firm unless required by the Securities Act or the Securities Act Regulations, but which shall satisfy the provisions of Rule 158(a) under Section 11(a) of the Securities Act) covering a period of at least twelve (12) consecutive months beginning after the date of this Agreement.

3.13 Stabilization. Neither the Company nor, to its knowledge, any of its employees, directors or stockholders (without the consent of the Representative) has taken or shall take, directly or indirectly, any action designed to or that has constituted or that might reasonably be expected to cause or result in, under Regulation M of the Exchange Act, or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Public Securities or Representative's Securities.

3.14 Internal Controls. The Company shall maintain a system of internal accounting controls sufficient to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary in order to permit preparation of financial statements in accordance with GAAP and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

3.15 Accountants. As of the date of this Agreement, the Company shall retain an independent registered public accounting firm reasonably acceptable to the Representative, and the Company shall continue to retain a nationally recognized independent registered public accounting firm for a period of at least three (3) years after the date of this Agreement. The Representative acknowledges that the Auditor is acceptable to the Representative.

3.16 FINRA. The Company shall advise the Representative (who shall make an appropriate filing with FINRA) if it is or becomes aware that (i) any officer or director of the Company, (ii) any beneficial owner of 5% or more of any class of the Company's securities or (iii) any beneficial owner of the Company's unregistered equity securities which were acquired during the 180 days immediately preceding the filing of the Registration Statement is or becomes an affiliate or associated person of a FINRA member participating in the Offering (as determined in accordance with the rules and regulations of FINRA).

3.17 No Fiduciary Duties. The Company acknowledges and agrees that the Underwriters' responsibility to the Company is solely contractual in nature and that none of the Underwriters or their affiliates or any selling agent shall be deemed to be acting in a fiduciary capacity, or otherwise owes any fiduciary duty to the Company or any of its affiliates in connection with the Offering and the other transactions contemplated by this Agreement.

3.18 Company Lock-Up Agreements.

3.18.1. Restriction on Sales of Capital Stock. The Company, on behalf of itself and any successor entity, agrees that, without the prior written consent of the Representative (which may be withheld, delayed or conditioned in the Representative's sole discretion), it will not, for a period beginning on the date of this Agreement and ending on the date that is the 90th day after the date of this Agreement (the "**Lock-Up Period**"), (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of capital stock of the Company or any securities convertible into or exercisable or exchangeable for shares of capital stock of the Company; (ii) file or cause to be filed any registration statement with the Commission relating to the offering of any shares of capital stock of the Company or any securities convertible into or exercisable or exchangeable for shares of capital stock of the Company; (iii) complete any offering of debt securities of the Company, other than the convertible loan described in the Registration Statement or entering into a line of credit with a traditional bank or (iv) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of capital stock of the Company, whether any such transaction described in clause (i), (ii), (iii) or (iv) above is to be settled by delivery of shares of capital stock of the Company or such other securities, in cash or otherwise.

The restrictions contained in this Section 3.18.1 (collectively, the "**Restrictions**") shall not apply to (i) the Public Securities to be sold hereunder (including the Preferred Conversion Shares and the Warrant Shares) and the Representative's Securities, (ii) the issuance by the Company of securities of the Company pursuant to any documents, agreements or securities existing or outstanding as of the Closing Date, (iii) the issuance by the Company of any securities of the Company under any equity compensation plan of the Company; or (iv) the issuance of any securities of the Company in connection with a merger, joint venture, licensing arrangement or any other similar non-capital raising transaction provided that in each of (ii) through (iv) above, the securities shall be restricted from sale during the entire Lock-Up Period.

Notwithstanding the foregoing, if (i) during the last 17 days of the Lock-Up Period, the Company issues an earnings release or material news or a material event relating to the Company occurs, or (ii) prior to the expiration of the Lock-Up Period, the Company announces that it will release earnings results or becomes aware that material news or a material event will occur during the 16-day period beginning on the last day of the Lock-Up Period, the restrictions imposed by this Section 3.18.1 shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of such material news or material event, as applicable, unless the Representative waives, in writing, such extension.

3.18.2. Restriction on Continuous Offerings. Notwithstanding the restrictions contained in Section 3.18.1, the Company, on behalf of itself and any successor entity, agrees that, without the prior written consent of the Representative, it will not, for a period of 12 months after the date of this Agreement, directly or indirectly in any "at the market" or continuous equity transaction, offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of shares of capital stock of the Company or any securities convertible into or exercisable or exchangeable for shares of capital stock of the Company.

3.19 Release of D&O Lock-up Period. If the Representative, in its sole discretion, agrees to release or waive the restrictions set forth in the Lock-Up Agreements described in Section 2.26 hereof for an officer or director of the Company and provide the Company with notice of the impending release or waiver at least three (3) Business Days before the effective date of the release or waiver, the Company agrees to announce the impending release or waiver by a press release substantially in the form of Exhibit C hereto through a major news service at least two (2) Business Days before the effective date of the release or waiver.

3.20 Blue Sky Qualifications. The Company shall use its commercially reasonable best efforts, in cooperation with the Underwriters, if necessary, to qualify the Public Securities and Representative's Securities for offering and sale under the applicable securities laws of such states and other jurisdictions (domestic or foreign) as the Representative may designate and to maintain such qualifications in effect so long as required to complete the distribution of the Public Securities and Representative's Securities; provided, however, that the Company shall not be obligated to file any general consent to service of process or to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise so subject.

3.21 Reporting Requirements. The Company, during the period when a prospectus relating to the Public Securities is (or, but for the exception afforded by Rule 172, would be) required to be delivered under the Securities Act, will file all documents required to be filed with the Commission pursuant to the Exchange Act within the time periods required by the Exchange Act and Exchange Act Regulations.

3.22 Press Releases. Prior to the Closing Date and any Option Closing Date, the Company shall not issue any press release or other communication directly or indirectly or hold any press conference with respect to the Company, its condition, financial or otherwise, or earnings, business affairs or business prospects (except for routine oral marketing communications in the ordinary course of business and consistent with the past practices of the Company), without the prior written consent of the Representative, which consent shall not be unreasonably withheld, unless in the judgment of the Company and its counsel, and after notification to the Representative, such press release or communication is required by law.

3.23 Sarbanes-Oxley. The Company shall at all times comply with all applicable provisions of the Sarbanes-Oxley Act in effect from time to time.

3.24 IRS Forms. The Company shall deliver to each Underwriter (or its agent), prior to or at the Closing Date, a properly completed and executed Internal Revenue Service ("**IRS**") Form W-9 or an IRS Form W-8, as appropriate, together with all required attachments to such form.

4. Conditions of Underwriters' Obligations. The obligations of the Underwriters to purchase and pay for the Public Securities, as provided herein, shall be subject to (i) the continuing accuracy of the representations and warranties of the Company as of the date hereof and as of each of the Closing Date and the Option Closing Date, if any; (ii) the accuracy of the statements of officers of the Company made pursuant to the provisions hereof; (iii) the performance by the Company in all material respects of its obligations hereunder; and (iv) the following conditions:

4.1 Regulatory Matters.

4.1.1. Effectiveness of Registration Statement; Rule 430A Information. The Registration Statement has become effective not later than 5:15 p.m., Eastern time, on the date of this Agreement or such later date and time as shall be consented to in writing by you, and, at each of the Closing Date and any Option Closing Date, no stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto has been issued under the Securities Act, no order preventing or suspending the use of any Preliminary Prospectus or the Prospectus has been issued and no proceedings for any of those purposes have been instituted or are pending or, to the Company's knowledge, contemplated by the Commission. The Company has complied with each request (if any) from the Commission for additional information. The Prospectus containing the Rule 430A Information shall have been filed with the Commission in the manner and within the time frame required by Rule 424(b) (without reliance on Rule 424(b)(8)) or a post-effective amendment providing such information shall have been filed with, and declared effective by, the Commission in accordance with the requirements of Rule 430A.

4.1.2. FINRA Clearance. On or before the date of this Agreement, the Representative shall have received clearance from FINRA as to the amount of compensation allowable or payable to the Underwriters as described in the Registration Statement.

4.1.3. Exchange Stock Market Clearance. On the Closing Date, the shares of Common Stock included in the Firm Securities, the Preferred Conversion Shares, the Representative's Warrant Shares and the Warrant Shares, shall have been approved for listing on the Exchange, subject only to official notice of issuance. On the first Option Closing Date (if any), the Option Shares and the Warrant Shares shall have been approved for listing on the Exchange, subject only to official notice of issuance.

4.2 Company Counsel Matters.

4.2.1. Closing Date Opinion of Counsel. On the Closing Date, the Representative shall have received the favorable opinion and negative assurance letter of Loeb & Loeb LLP, counsel to the Company, dated the Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to the Representative.

4.2.2. Opinion of Intellectual Property Counsel for the Company. On the Closing Date, the Representative shall have received the opinion and negative assurance letter of Morrison & Foerster LLP, intellectual property counsel for the Company, dated the Closing Date, addressed to the Representative, in form and substance reasonably satisfactory to the Representative.

4.2.3. Option Closing Date Opinions of Counsel. On the Option Closing Date, if any, the Representative shall have received the favorable opinions and negative assurance letters of each counsel listed in Sections 4.2.1 and 4.2.2, dated the Option Closing Date, addressed to the Representative and in form and substance reasonably satisfactory to the Representative, confirming as of the Option Closing Date, the statements made by such counsels in their respective opinions delivered on the Closing Date.

4.2.4. Reliance. In rendering such opinions, such counsel may rely: (i) as to matters involving the application of laws other than the laws of the United States and jurisdictions in which they are admitted, to the extent such counsel deems proper and to the extent specified in such opinion, if at all, upon an opinion or opinions (in form and substance reasonably satisfactory to the Representative) of other counsel reasonably acceptable to the Representative, familiar with the applicable laws; and (ii) as to matters of fact, to the extent they deem proper, on certificates or other written statements of officers of the Company and officers of departments of various jurisdictions having custody of documents respecting the corporate existence or good standing of the Company, provided that copies of any such statements or certificates shall be delivered to Representative Counsel if requested.

4.2.5. Certificate of Designation. On the Closing Date, the Representative shall have received evidence of the filing and acceptance of the Certificate of Designation of the Preferred Stock from the Secretary of State of Delaware.

4.3 Comfort Letters.

4.3.1. Cold Comfort Letter. At the time this Agreement is executed the Representative shall have received a cold comfort letter containing statements and information of the type customarily included in accountants' comfort letters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, addressed to the Representative and in form and substance satisfactory in all respects to the Representative and to the Auditor, dated as of the date of this Agreement.

4.3.2. Bring-down Comfort Letter. At each of the Closing Date and the Option Closing Date, if any, the Representative shall have received from the Auditor a letter, dated as of the Closing Date or the Option Closing Date, as applicable, to the effect that the Auditor reaffirms the statements made in the letter furnished pursuant to Section 4.3.1, except that the specified date referred to shall be a date not more than three (3) business days prior to the Closing Date or the Option Closing Date, as applicable.

4.4 Officers' Certificates.

4.4.1. Officers' Certificate. The Company shall have furnished to the Representative a certificate, dated the Closing Date and any Option Closing Date (if such date is other than the Closing Date), of its Chief Executive Officer, its President and its Chief Financial Officer stating that (i) such officers have carefully examined the Registration Statement, the Pricing Disclosure Package, any Issuer Free Writing Prospectus and the Prospectus and, in their opinion, the Registration Statement and each amendment thereto, as of the Applicable Time and as of the Closing Date (or any Option Closing Date if such date is other than the Closing Date) did not include any untrue statement of a material fact and did not omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading, and the Pricing Disclosure Package, as of the Applicable Time and as of the Closing Date (or any Option Closing Date if such date is other than the Closing Date), any Issuer Free Writing Prospectus as of its date and as of the Closing Date (or any Option Closing Date if such date is other than the Closing Date), the Prospectus and each amendment or supplement thereto, as of the respective date thereof and as of the Closing Date, did not include any untrue statement of a material fact and did not omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances in which they were made, not misleading, (ii) since the effective date of the Registration Statement, no event has occurred which should have been set forth in a supplement or amendment to the Registration Statement, the Pricing Disclosure Package or the Prospectus, (iii) to the best of their knowledge after reasonable investigation, as of the Closing Date (or any Option Closing Date if such date is other than the Closing Date), the representations and warranties of the Company in this Agreement are true and correct in all material respects (except for those representations and warranties qualified as to materiality, which shall be true and correct in all respects and except for those representations and warranties which refer to facts existing at a specific date, which shall be true and correct as of such date) and the Company has complied with all agreements and satisfied all conditions on its part to be performed or satisfied hereunder at or prior to the Closing Date (or any Option Closing Date if such date is other than the Closing Date), and (iv) there has not been, subsequent to the date of the most recent audited financial statements included or incorporated by reference in the Pricing Disclosure Package, any Material Adverse Change in the financial position or results of operations of the Company, or any change or development that, singularly or in the aggregate, would involve a Material Adverse Change in or affecting the condition (financial or otherwise), results of operations, business, assets or prospects of the Company, except as set forth in the Prospectus.

4.4.2. Secretary's Certificate. At each of the Closing Date and the Option Closing Date, if any, the Representative shall have received a certificate of the Company signed by the Secretary of the Company, dated the Closing Date or the Option Date, as the case may be, respectively, certifying: (i) that each of the Charter and Bylaws is true and complete, has not been modified and is in full force and effect; (ii) that the resolutions of the Company's Board of Directors relating to the Offering are in full force and effect and have not been modified; (iii) as to the accuracy and completeness of all correspondence between the Company or its counsel and the Commission; and (iv) as to the incumbency of the officers of the Company. The documents referred to in such certificate shall be attached to such certificate.

4.5 No Material Changes. Prior to and on each of the Closing Date and each Option Closing Date, if any: (i) there shall have been no Material Adverse Change or development involving a prospective Material Adverse Change in the condition or prospects or the business activities, financial or otherwise, of the Company from the latest dates as of which such condition is set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus; (ii) no action, suit or proceeding, at law or in equity, shall have been pending or threatened against the Company or any Insider before or by any court or federal or state commission, board or other administrative agency wherein an unfavorable decision, ruling or finding may materially adversely affect the business, operations, prospects or financial condition or income of the Company, except as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus; (iii) no stop order shall have been issued under the Securities Act and no proceedings therefor shall have been initiated or threatened by the Commission; and (iv) the Registration Statement, the Pricing Disclosure Package and the Prospectus and any amendments or supplements thereto shall contain all material statements which are required to be stated therein in accordance with the Securities Act and the Securities Act Regulations and shall conform in all material respects to the requirements of the Securities Act and the Securities Act Regulations, and neither the Registration Statement, the Pricing Disclosure Package nor the Prospectus nor any amendment or supplement thereto shall contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

4.6 No Material Misstatement or Omission. The Underwriters shall not have discovered and disclosed to the Company on or prior to the Closing Date and any Option Closing Date that the Registration Statement or any amendment or supplement thereto contains an untrue statement of a fact which, in the opinion of counsel for the Underwriters, is material or omits to state any fact which, in the opinion of such counsel, is material and is required to be stated therein or is necessary to make the statements therein not misleading, or that the Registration Statement, the Pricing Disclosure Package, any Issuer Free Writing Prospectus or the Prospectus or any amendment or supplement thereto contains an untrue statement of fact which, in the opinion of such counsel, is material or omits to state any fact which, in the opinion of such counsel, is material and is necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading.

4.7 Corporate Proceedings. All corporate proceedings and other legal matters incident to the authorization, form and validity of each of this Agreement, the Representative's Securities, the Public Securities, the Registration Statement, the Pricing Disclosure Package, each Issuer Free Writing Prospectus, if any, and the Prospectus and all other legal matters relating to this Agreement and the transactions contemplated hereby and thereby shall be reasonably satisfactory in all material respects to counsel for the Underwriters, and the Company shall have furnished to such counsel all documents and information that they may reasonably request to enable them to pass upon such matters.

4.8 Delivery of Agreements.

4.8.1. Lock-Up Agreements. On or before the date of this Agreement, the Company shall have delivered to the Representative executed copies of the Lock-Up Agreements from each of the persons listed in Schedule 3 hereto.

4.8.2. Warrant Agreement. On the Closing Date, the Company shall have delivered to the Representative executed copies of the Warrant Agreement.

4.8.3. Representative's Warrant Agreement. On the Closing Date, the Company shall have delivered to the Representative executed copies of the Representative's Warrant Agreement.

4.9 Additional Documents. At the Closing Date and at each Option Closing Date (if any) Representative Counsel shall have been furnished with such documents and opinions as they may require for the purpose of enabling Representative Counsel to deliver an opinion to the Underwriters, or in order to evidence the accuracy of any of the representations or warranties, or the fulfillment of any of the conditions, herein contained; and all proceedings taken by the Company in connection with the issuance and sale of the Public Securities and Representative's Securities as herein contemplated shall be satisfactory in form and substance to the Representative and Representative Counsel.

5. Indemnification.

5.1 Indemnification of the Underwriters.

5.1.1. General. Subject to the conditions set forth below, the Company agrees to indemnify and hold harmless each Underwriter, its affiliates and each of its and their respective directors, officers, members, employees, representatives, partners, shareholders, affiliates, counsel, and agents and each person, if any, who controls any such Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act (collectively the "**Underwriter Indemnified Parties**," and each an "**Underwriter Indemnified Party**"), against any and all loss, liability, claim, damage and expense whatsoever (including but not limited to any and all legal or other expenses reasonably incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, whether arising out of any action between any of the Underwriter Indemnified Parties and the Company or between any of the Underwriter Indemnified Parties and any third party, or otherwise) to which they or any of them may become subject under the Securities Act, the Exchange Act or any other statute or at common law or otherwise or under the laws of foreign countries (a "**Claim**"), (i) arising out of or based upon any untrue statement or alleged untrue statement of a material fact contained in (A) the Registration Statement, the Pricing Disclosure Package, any Preliminary Prospectus, the Prospectus, or in any Issuer Free Writing Prospectus (as from time to time each may be amended and supplemented); (B) any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the Offering, including any "road show" or investor presentations made to investors by the Company (whether in person or electronically); or (C) any application or other document or written communication (in this Section 5, collectively called "application") executed by the Company or based upon written information furnished by the Company in any jurisdiction in order to qualify the Public Securities, the Preferred Conversion Shares, the Warrant Shares and the Representative's Securities under the securities laws thereof or filed with the Commission, any state securities commission or agency, the Exchange or any other national securities exchange; or the omission or alleged omission therefrom of a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading, unless such statement or omission was made in reliance upon, and in conformity with, the Underwriters' Information or (ii) otherwise arising in connection with or allegedly in connection with the Offering. The Company also agrees that it will reimburse each Underwriter Indemnified Party for all fees and expenses (including but not limited to any and all legal or other expenses reasonably incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, whether arising out of any action between any of the Underwriter Indemnified Parties and the Company or between any of the Underwriter Indemnified Parties and any third party, or otherwise) (collectively, the "**Expenses**"), and further agrees wherever and whenever possible to advance payment of Expenses as they are incurred by an Underwriter Indemnified Party in investigating, preparing, pursuing or defending any Claim.

5.1.2. Procedure. If any action is brought against an Underwriter Indemnified Party in respect of which indemnity may be sought against the Company pursuant to Section 5.1.1, such Underwriter Indemnified Party shall promptly notify the Company in writing of the institution of such action and the Company shall assume the defense of such action, including the employment and fees of counsel (subject to the approval of such Underwriter Indemnified Party) and payment of actual expenses if an Underwriter Indemnified Party requests that the Company do so. Such Underwriter Indemnified Party shall have the right to employ its or their own counsel in any such case, but the fees and expenses of such counsel shall be at the expense of the Company, and shall be advanced by the Company. The Company shall not be liable for any settlement of any action effected without its consent (which shall not be unreasonably withheld). In addition, the Company shall not, without the prior written consent of the Underwriters, settle, compromise or consent to the entry of any judgment in or otherwise seek to terminate any pending or threatened action in respect of which advancement, reimbursement, indemnification or contribution may be sought hereunder (whether or not such Underwriter Indemnified Party is a party thereto) unless such settlement, compromise, consent or termination (i) includes an unconditional release of each Underwriter Indemnified Party, acceptable to such Underwriter Indemnified Party, from all liabilities, expenses and claims arising out of such action for which indemnification or contribution may be sought and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any Underwriter Indemnified Party.

5.2 Indemnification of the Company. Each Underwriter, severally and not jointly, agrees to indemnify and hold harmless the Company, its directors, its officers who signed the Registration Statement and persons who control the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act against any and all loss, liability, claim, damage and expense described in the foregoing indemnity from the Company to the several Underwriters, as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions made in the Registration Statement, any Preliminary Prospectus, the Pricing Disclosure Package or Prospectus or any amendment or supplement thereto or in any application, in reliance upon, and in strict conformity with, the Underwriters' Information. In case any action shall be brought against the Company or any other person so indemnified based on any Preliminary Prospectus, the Registration Statement, the Pricing Disclosure Package or Prospectus or any amendment or supplement thereto or any application, and in respect of which indemnity may be sought against any Underwriter, such Underwriter shall have the rights and duties given to the Company, and the Company and each other person so indemnified shall have the rights and duties given to the several Underwriters by the provisions of Section 5.1.2. The Company agrees promptly to notify the Representative of the commencement of any litigation or proceedings against the Company or any of its officers, directors or any person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, in connection with the issuance and sale of the Public Securities and Representative's Securities or in connection with the Registration Statement, the Pricing Disclosure Package, the Prospectus, or any Issuer Free Writing Prospectus.

5.3 Contribution.

5.3.1. Contribution Rights. If the indemnification provided for in this Section 5 shall for any reason be unavailable to or insufficient to hold harmless an indemnified party under Section 5.1 or 5.2 in respect of any loss, claim, damage or liability, or any action in respect thereof, referred to therein, then each indemnifying party shall, in lieu of indemnifying such indemnified party, contribute to the amount paid or payable by such indemnified party as a result of such loss, claim, damage or liability, or action in respect thereof, (i) in such proportion as shall be appropriate to reflect the relative benefits received by the Company, on the one hand, and the Underwriters, on the other, from the Offering, or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company, on the one hand, and the Underwriters, on the other, with respect to the statements or omissions that resulted in such loss, claim, damage or liability, or action in respect thereof, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and the Underwriters, on the other, with respect to such Offering shall be deemed to be in the same proportion as the total net proceeds from the Offering of the Securities purchased under this Agreement (before deducting expenses) received by the Company, as set forth in the table on the cover page of the Prospectus, on the one hand, and the total underwriting discounts and commissions received by the Underwriters in connection with the Offering, as set forth in the table on the cover page of the Prospectus, on the other hand. The relative fault shall be determined by reference to whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 5.3.1 were to be determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, damage or liability, or action in respect thereof, referred to above in this Section 5.3.1 shall be deemed to include, for purposes of this Section 5.3.1, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 5.3.1 in no event shall an Underwriter be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter in connection with the Offering exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation.

5.3.2. Contribution Procedure. Within fifteen (15) days after receipt by any party to this Agreement (or its representative) of notice of the commencement of any action, suit or proceeding, such party will, if a claim for contribution in respect thereof is to be made against another party ("**contributing party**"), notify the contributing party of the commencement thereof, but the failure to so notify the contributing party will not relieve it from any liability which it may have to any other party other than for contribution hereunder. In case any such action, suit or proceeding is brought against any party, and such party notifies a contributing party or its representative of the commencement thereof within the aforesaid 15 days, the contributing party will be entitled to participate therein with the notifying party and any other contributing party similarly notified. Any such contributing party shall not be liable to any party seeking contribution on account of any settlement of any claim, action or proceeding affected by such party seeking contribution on account of any settlement of any claim, action or proceeding affected by such party seeking contribution without the written consent of such contributing party. The contribution provisions contained in this Section 5.3.2 are intended to supersede, to the extent permitted by law, any right to contribution under the Securities Act, the Exchange Act or otherwise available. Each Underwriter's obligations to contribute pursuant to this Section 5.3 are several and not joint.

6. Default by an Underwriter.

6.1 Default Not Exceeding 10% of Firm Securities or Option Securities. If any Underwriter or Underwriters shall default in its or their obligations to purchase the Firm Securities or the Option Securities, if the Option is exercised hereunder, and if the number of the Firm Securities or Option Securities with respect to which such default relates does not exceed in the aggregate 10% of the number of Firm Securities or Option Securities that all Underwriters have agreed to purchase hereunder, then such Firm Securities or Option Securities to which the default relates shall be purchased by the non-defaulting Underwriters in proportion to their respective commitments hereunder.

6.2 Default Exceeding 10% of Firm Securities or Option Securities. In the event that the default addressed in Section 6.1 relates to more than 10% of the Firm Securities or Option Securities, you may in your discretion arrange for yourself or for another party or parties to purchase such Firm Securities or Option Securities to which such default relates on the terms contained herein. If, within one (1) Business Day after such default relating to more than 10% of the Firm Securities or Option Securities, you do not arrange for the purchase of such Firm Securities or Option Securities, then the Company shall be entitled to a further period of one (1) Business Day within which to procure another party or parties satisfactory to you to purchase said Firm Securities or Option Securities on such terms. In the event that neither you nor the Company arrange for the purchase of the Firm Securities or Option Securities to which a default relates as provided in this Section 6, this Agreement will automatically be terminated by you or the Company without liability on the part of the Company (except as provided in Sections 3.9 and 5 hereof) or the several Underwriters (except as provided in Section 5 hereof); provided, however, that if such default occurs with respect to the Option Securities, this Agreement will not terminate as to the Firm Securities; and provided, further, that nothing herein shall relieve a defaulting Underwriter of its liability, if any, to the other Underwriters and to the Company for damages occasioned by its default hereunder.

6.3 Postponement of Closing Date. In the event that the Firm Securities or Option Securities to which the default relates are to be purchased by the non-defaulting Underwriters, or are to be purchased by another party or parties as aforesaid, you or the Company shall have the right to postpone the Closing Date or Option Closing Date for a reasonable period, but not in any event exceeding five (5) Business Days, in order to effect whatever changes may thereby be made necessary in the Registration Statement, the Pricing Disclosure Package or the Prospectus or in any other documents and arrangements, and the Company agrees to file promptly any amendment to the Registration Statement, the Pricing Disclosure Package or the Prospectus that in the opinion of counsel for the Underwriter may thereby be made necessary. The term "**Underwriter**" as used in this Agreement shall include any party substituted under this Section 6 with like effect as if it had originally been a party to this Agreement with respect to such Securities.

7. Additional Covenants.

7.1 [Reserved.]

7.2 Board Composition and Board Designations. The Company shall ensure that: (i) the qualifications of the persons serving as members of the Board of Directors and the overall composition of the Board comply with the Sarbanes-Oxley Act, with the Exchange Act and with the listing rules of the Exchange or any other national securities exchange, as the case may be, in the event the Company seeks to have any of its securities listed on another exchange or quoted on an automated quotation system, and (ii) if applicable, at least one member of the Audit Committee of the Board of Directors qualifies as an "audit committee financial expert," as such term is defined under Regulation S-K and the listing rules of the Exchange.

7.3 Prohibition on Press Releases and Public Announcements. The Company shall not issue press releases or engage in any other publicity, without the Representative's prior written consent, for a period ending at 5:00 p.m., Eastern time, on the first (1st) Business Day following the 40th day after the Closing Date, other than normal and customary releases issued in the ordinary course of the Company's business.

7.4 Right of First Refusal. Provided that the Firm Securities are sold in accordance with the terms of this Agreement, the Representative shall have an irrevocable right of first refusal (the "**Right of First Refusal**"), for a period of nine (9) months after the Closing Date, to act as lead investment banker, lead book-runner and/or lead placement agent, at the Representative's sole and exclusive discretion, for each and every future public or private equity or debt offering, including all equity linked financings (each, a "**Subject Transaction**"), during such nine (9) month period, of the Company, or any successor to or subsidiary of the Company, on terms and conditions customary to the Representative for such Subject Transactions. For the avoidance of any doubt, the Company shall not retain, engage or solicit any additional investment banker, book-runner, financial advisor, underwriter and/or placement agent in a Subject Transaction without the express written consent of the Representative.

The Company shall notify the Representative of its intention to pursue a Subject Transaction, including the material terms thereof, by providing written notice thereof by registered mail or overnight courier service addressed to the Representative. If the Representative fails to exercise its Right of First Refusal with respect to any Subject Transaction within ten (10) Business Days after the mailing of such written notice, then the Representative shall have no further claim or right with respect to the Subject Transaction. The Representative may elect, in its sole and absolute discretion, not to exercise its Right of First Refusal with respect to any Subject Transaction; provided that any such election by the Representative shall not adversely affect the Representative's Right of First Refusal with respect to any other Subject Transaction during the nine (9) month period agreed to above.

8. Effective Date of this Agreement and Termination Thereof.

8.1 Effective Date. This Agreement shall become effective when both the Company and the Representative have executed the same and delivered counterparts of such signatures to the other party.

8.2 Termination. The Representative shall have the right to terminate this Agreement at any time prior to any Closing Date, (i) if any domestic or international event or act or occurrence has materially disrupted, or in your opinion will in the immediate future materially disrupt, general securities markets in the United States; or (ii) if trading on the New York Stock Exchange or the Nasdaq Stock Market LLC shall have been suspended or materially limited, or minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required by FINRA or by order of the Commission or any other government authority having jurisdiction; or (iii) if the United States shall have become involved in a new war or an increase in major hostilities; or (iv) if a banking moratorium has been declared by a New York State or federal authority; or (v) if a moratorium on foreign exchange trading has been declared which materially adversely impacts the United States securities markets; or (vi) if the Company shall have sustained a material loss by fire, flood, accident, hurricane, earthquake, theft, sabotage or other calamity or malicious act which, whether or not such loss shall have been insured, will, in your opinion, make it inadvisable to proceed with the delivery of the Firm Securities or Option Securities; or (vii) if the Company is in material breach of any of its representations, warranties or covenants hereunder; or (viii) if the Representative shall have become aware after the date hereof of such a Material Adverse Change in the conditions or prospects of the Company, or such adverse material change in general market conditions as in the Representative's judgment would make it impracticable to proceed with the offering, sale and/or delivery of the Public Securities or to enforce contracts made by the Underwriters for the sale of the Public Securities.

8.3 Expenses. Notwithstanding anything to the contrary in this Agreement, except in the case of a default by the Underwriters, pursuant to Section 6.2 above, in the event that this Agreement shall not be carried out for any reason whatsoever, within the time specified herein or any extensions thereof pursuant to the terms herein, the Company shall be obligated to pay to the Underwriters their actual and accountable out-of-pocket expenses related to the transactions contemplated herein then due and payable (including the fees and disbursements of Representative Counsel) up to $[ ] and upon demand the Company shall pay the full amount thereof to the Representative on behalf of the Underwriters; provided, however, that such expense cap in no way limits or impairs the indemnification and contribution provisions of this Agreement. Notwithstanding the foregoing, any advance received by the Representative will be reimbursed to the Company to the extent not actually incurred in compliance with FINRA Rule 5110(f)(2)(C).

8.4 Indemnification. Notwithstanding any contrary provision contained in this Agreement, any election hereunder or any termination of this Agreement, and whether or not this Agreement is otherwise carried out, the provisions of Section 5 shall remain in full force and effect and shall not be in any way affected by, such election or termination or failure to carry out the terms of this Agreement or any part hereof.

8 . 5 Representations, Warranties, Agreements to Survive . All representations, warranties and agreements contained in this Agreement or in certificates of officers of the Company submitted pursuant hereto, shall remain operative and in full force and effect regardless of (i) any investigation made by or on behalf of any Underwriter or its Affiliates or selling agents, any person controlling any Underwriter, its officers or directors or any person controlling the Company or (ii) delivery of and payment for the Public Securities and Representative's Securities.

9. Miscellaneous.

9.1 Notices. All communications hereunder, except as herein otherwise specifically provided, shall be in writing and shall be mailed (registered or certified mail, return receipt requested), personally delivered or sent by facsimile transmission and confirmed and shall be deemed given when so delivered or faxed and confirmed or if mailed, two (2) days after such mailing.

If to the Representative:

A.G.P./Alliance Global Partners
590 Madison Avenue
New York, NY 10022
Attn: Mr. David Bocchi, Head of Investment Banking
with a copy (which shall not constitute notice) to:

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
666 Third Avenue
New York, NY 10017
Attn: Anthony J. Marsico, Esq.
Fax No.: 212-983-3115

If to the Company:

Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, CA 94080
Attention: Sunil Bhonsle
with a copy (which shall not constitute notice) to:

Loeb & Loeb LLP
345 Park Avenue, #18
New York, NY 10154
Attention: Fran Stoller

9.2 Headings. The headings contained herein are for the sole purpose of convenience of reference, and shall not in any way limit or affect the meaning or interpretation of any of the terms or provisions of this Agreement.

9.3 Amendment. This Agreement may only be amended by a written instrument executed by each of the parties hereto.

9.4 Entire Agreement. This Agreement (together with the other agreements and documents being delivered pursuant to or in connection with this Agreement) constitutes the entire agreement of the parties hereto with respect to the subject matter hereof and thereof, and supersedes all prior agreements and understandings of the parties, oral and written, with respect to the subject matter hereof.

9.5 Binding Effect. This Agreement shall inure solely to the benefit of and shall be binding upon the Representative, the Underwriters, the Company and the controlling persons, directors and officers referred to in Section 5 hereof, and their respective successors, legal representatives, heirs and assigns, and no other person shall have or be construed to have any legal or equitable right, remedy or claim under or in respect of or by virtue of this Agreement or any provisions herein contained. The term "successors and assigns" shall not include a purchaser, in its capacity as such, of securities from any of the Underwriters.

9.6 Governing Law; Consent to Jurisdiction; Trial by Jury. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New York, without giving effect to conflict of laws principles thereof. The Company hereby agrees that any action, proceeding or claim against it arising out of, or relating in any way to this Agreement shall be brought and enforced in the New York Supreme Court, County of New York, or in the United States District Court for the Southern District of New York, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum. Any such process or summons to be served upon the Company may be served by transmitting a copy thereof by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 9.1 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the Company in any action, proceeding or claim. The Company agrees that the prevailing party(ies) in any such action shall be entitled to recover from the other party(ies) all of its reasonable attorneys' fees and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor. The Company (on its behalf and, to the extent permitted by applicable law, on behalf of its stockholders and affiliates) and each of the Underwriters hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

9.7 Execution in Counterparts. This Agreement may be executed in one or more counterparts, and by the different parties hereto in separate counterparts, each of which shall be deemed to be an original, but all of which taken together shall constitute one and the same agreement, and shall become effective when one or more counterparts has been signed by each of the parties hereto and delivered to each of the other parties hereto. Delivery of a signed counterpart of this Agreement by facsimile or email/pdf transmission shall constitute valid and sufficient delivery thereof.

9.8 Waiver, etc. The failure of any of the parties hereto to at any time enforce any of the provisions of this Agreement shall not be deemed or construed to be a waiver of any such provision, nor to in any way effect the validity of this Agreement or any provision hereof or the right of any of the parties hereto to thereafter enforce each and every provision of this Agreement. No waiver of any breach, non-compliance or non-fulfillment of any of the provisions of this Agreement shall be effective unless set forth in a written instrument executed by the party or parties against whom or which enforcement of such waiver is sought; and no waiver of any such breach, non-compliance or non-fulfillment shall be construed or deemed to be a waiver of any other or subsequent breach, non-compliance or non-fulfillment.

[Signature Page Follows]

If the foregoing correctly sets forth the understanding between the Underwriters and the Company, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between us.

Very truly yours,

TITAN PHARMACEUTICALS, INC.

By: _____
Name:
Title:

Confirmed as of the date first written above mentioned, on behalf of itself and as Representative of the several Underwriters named on Schedule 1 hereto:

A.G.P./ALLIANCE GLOBAL PARTNERS

By: _____
Name:
Title:

SCHEDULE 1

Underwriter	Number of Class A Units	Number of Class B Units
A.G.P./Alliance Global Partners/	[ ]	[ ]
CIM Securities, LLC	[ ]	[ ]

Number of Option Shares	Number of Option Warrants
[ ]	[ ]

SCHEDULE 2-A

Pricing Information

Number of Class A Units: [ ]

Number of Class B Units: [ ]

Number of Option Shares: [ ]

Number of Option Warrants: [ ]

Public Offering Price per Class A Unit: $[ ]

Underwriting Discount per Class A Unit: $[ ]

Public Offering Price per Class B Unit: $1,000.00

Underwriting Discount per Class B Unit: $70.00

SCHEDULE 2-B

Issuer General Use Free Writing Prospectuses

1. Issuer Free Writing Prospectus, dated September 4, 2018 (Registration No. 333-226841)
2. Issuer Free Writing Prospectus, dated September 10, 2018 (Registration No. 333-226841)

SCHEDULE 3

List of Lock-Up Parties

- Joseph A. Akers
- Sunil Bhonsle
- Rajinder Kumar, Ph.D.
- M. David MacFarlane, Ph.D.
- James R. McNab, Jr.
- Marc Rubin, M.D.
- Federico Seghi Recli
- Scott A. Smith
- L. Molteni & C. Dei Frattelli Alitti Società Di Esercizio

EXHIBIT A

Form of Representative's Warrant

EXHIBIT B

Lock-Up Agreement

_____, 2018

Alliance Global Partners
590 Madison Avenue, 36th Floor
New York, New York 10022

Ladies and Gentlemen:

The undersigned understands that A.G.P./Alliance Global Partners, as Representative of the several underwriters (the " **Representative**"), proposes to enter into an Underwriting Agreement (the "**Underwriting Agreement**") with Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), providing for the public offering (the "**Public Offering**") by the several Underwriters named in Schedule A to the Underwriting Agreement (the "**Underwriters**") of shares of common stock, par value $0.001 per share, of the Company (the "**Shares**"). Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Underwriting Agreement.

To induce the Representative to continue its efforts in connection with the Public Offering, the undersigned hereby agrees that, without the prior written consent of the Representative, the undersigned will not, during the period commencing on the date hereof and ending ninety (90) days after the Closing Date (the "**Lock-Up Period**"), (1) offer, pledge, sell, contract to sell, grant, lend, or otherwise transfer or dispose of, directly or indirectly, any Shares or any securities convertible into or exercisable or exchangeable for Shares, whether now owned or hereafter acquired by the undersigned or with respect to which the undersigned has or hereafter acquires the power of disposition (collectively, the "**Lock-Up Securities**"); (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Lock-Up Securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Lock-Up Securities, in cash or otherwise; (3) make any demand for or exercise any right with respect to the registration of any Lock-Up Securities; or (4) publicly disclose the intention to make any offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge or other arrangement relating to any Lock-Up Securities. Notwithstanding the foregoing, and subject to the conditions below, the undersigned may transfer Lock-Up Securities without the prior written consent of the Representative in connection with (a) transactions relating to Lock-Up Securities acquired in open market transactions after the completion of the Public Offering; *provided* that no filing under Section 16(a) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), shall be required or shall be voluntarily made in connection with subsequent sales of Lock-Up Securities acquired in such open market transactions; (b) transfers of Lock-Up Securities as a *bona fide* gift, by will or intestacy or to a family member or trust for the benefit of a family member (for purposes of this lock-up agreement, "family member" means any relationship by blood, marriage or adoption, not more remote than first cousin); (c) transfers of Lock-Up Securities to a charity or educational institution; or (d) if the undersigned, directly or indirectly, controls a corporation, partnership, limited liability company or other business entity, any transfers of Lock-Up Securities to any shareholder, partner or member of, or owner of similar equity interests in, the undersigned, as the case may be; *provided* that in the case of any transfer pursuant to the foregoing clauses (b), (c) or (d), (i) any such transfer shall not involve a disposition for value, (ii) each transferee shall sign and deliver to the Representative a lock-up agreement substantially in the form of this lock-up agreement and (iii) no filing under Section 16(a) of the Exchange Act shall be required or shall be voluntarily made. The undersigned also agrees and consents to the entry of stop transfer instructions with the Company's transfer agent and registrar against the transfer of the undersigned's Lock-Up Securities except in compliance with this lock-up agreement.

If the undersigned is an officer or director of the Company, (i) the undersigned agrees that the foregoing restrictions shall be equally applicable to any issuer-directed or "friends and family" Shares that the undersigned may purchase in the Public Offering; (ii) the Representative agrees that, at least three (3) business days before the effective date of any release or waiver of the foregoing restrictions in connection with a transfer of Lock-Up Securities, the Representative will notify the Company of the impending release or waiver; and (iii) the Company has agreed in the Underwriting Agreement to announce the impending release or waiver by press release through a major news service at least two (2) business days before the effective date of the release or waiver. Any release or waiver granted by the Representative hereunder to any such officer or director shall only be effective two (2) business days after the publication date of such press release. The provisions of this paragraph will not apply if (a) the release or waiver is effected solely to permit a transfer of Lock-Up Securities not for consideration and (b) the transferee has agreed in writing to be bound by the same terms described in this lock-up agreement to the extent and for the duration that such terms remain in effect at the time of such transfer.

The undersigned agrees that, prior to engaging in any transaction or taking any other action that is subject to the terms of this lock-up agreement during the period from the date hereof to and including the 34th day following the expiration of the initial Lock-Up Period, the undersigned will give notice thereof to the Company and will not consummate any such transaction or take any such action unless it has received written confirmation from the Company that the Lock-Up Period has expired.

No provision in this agreement shall be deemed to restrict or prohibit the exercise, exchange or conversion by the undersigned of any securities exercisable or exchangeable for or convertible into Shares, as applicable; *provided* that the undersigned does not transfer the Shares acquired on such exercise, exchange or conversion during the Lock-Up Period, unless otherwise permitted pursuant to the terms of this lock-up agreement. In addition, no provision herein shall be deemed to restrict or prohibit the entry into or modification of a so-called "10b5-1" plan at any time (other than the entry into or modification of such a plan in such a manner as to cause the sale of any Lock-Up Securities within the Lock-Up Period).

The undersigned understands that the Company and the Representative are relying upon this lock-up agreement in proceeding toward consummation of the Public Offering. The undersigned further understands that this lock-up agreement is irrevocable and shall be binding upon the undersigned's heirs, legal representatives, successors and assigns.

The undersigned understands that, if the Underwriting Agreement is not executed by November 15, 2018, or if the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to the initial closing date of the Shares to be sold thereunder, then this lock-up agreement shall be void and of no further force or effect.

[Remainder of Page Intentionally Blank]

Whether or not the Public Offering actually occurs depends on a number of factors, including market conditions. Any Public Offering will only be made pursuant to an Underwriting Agreement, the terms of which are subject to negotiation between the Company and the Representative.

Very truly yours,

_____

(Name - Please Print)

_____

(Signature)

_____

(Name of Signatory, in the case of entities - Please Print)

_____

(Title of Signatory, in the case of entities - Please Print)

Address: _____

_____

_____

EXHIBIT C

Form of Press Release

TITAN PHARMACEUTICALS, INC.

[Date]

Titan Pharmaceuticals, In. (the "Company") announced today that A.G.P./Alliance Global Partners, acting as representative for the underwriters in the Company's recent public offering of _____ shares of the Company's common stock, is [waiving] [releasing] a lock-up restriction with respect to _____ shares of the Company's common stock held by [certain officers or directors] [an officer or director] of the Company. The [waiver] [release] will take effect on _____, 20___, and the shares may be sold on or after such date.

This press release is not an offer or sale of the securities in the United States or in any other jurisdiction where such offer or sale is prohibited, and such securities may not be offered or sold in the United States absent registration or an exemption from registration under the Securities Act of 1933, as amended.

Exhibit 4.6

TITAN PHARMACEUTICALS, INC.
WARRANT AGENCY AGREEMENT

WARRANT AGENCY AGREEMENT (this "**Warrant Agreement**") made as of _____, 2018 (the "**Issuance Date**"), between Titan Pharmaceuticals, Inc., a Delaware corporation, with offices at 400 Oyster Point Blvd., Suite 505, South San Francisco, California 94080 ("**Company**"), and Continental Stock Transfer & Trust Company, with offices at 1 State Street, 30th Floor, New York, New York 10004 ("**Warrant Agent**").

WHEREAS, the Company is engaged in a public offering (the "**Offering**") of Class A Units consisting of Common Stock and Warrants and Class B Units consisting of Series A Convertible Preferred Stock and Warrants and has determined to issue and deliver up to _____ Warrants (the "**Warrants**") to the public investors in the Offering, with each such Warrant evidencing the right of the holder thereof to purchase _____ of a share of common stock, par value $0.001 per share, of the Company (the "**Common Stock**") for $_____, subject to adjustment as described herein; and

WHEREAS, the Company has filed with the U.S. Securities and Exchange Commission (the "**Commission**") a Registration Statement, No. 333-226841 on Form S-1 (as the same may be amended from time to time, the "**Registration Statement**") for the registration, under the Securities Act of 1933, as amended (the "**Securities Act**") of, among other securities, the Warrants and the Common Stock issuable upon exercise of the Warrants (the "**Warrant Shares**"), and such Registration Statement was declared effective on _____, 2018; and

WHEREAS, the Company desires the Warrant Agent to act on behalf of the Company, and the Warrant Agent is willing to so act, in connection with the issuance, registration, transfer, exchange and exercise of the Warrants; and

WHEREAS, the Company desires to provide for the form and provisions of the Warrants, the terms upon which they shall be issued and exercised, and the respective rights, limitation of rights, and immunities of the Company, the Warrant Agent, and the holders of the Warrants (each, a "**Holder**"); and

WHEREAS, all acts and things have been done and performed which are necessary to make the Warrants, when executed on behalf of the Company and countersigned by or on behalf of the Warrant Agent, as provided herein, the valid and binding obligations of the Company, and to authorize the execution and delivery of this Warrant Agreement.

NOW, THEREFORE, in consideration of the mutual agreements herein contained, the parties hereto agree as follows:

1. Appointment of Warrant Agent. The Company hereby appoints the Warrant Agent to act as agent for the Company for the Warrants, and the Warrant Agent hereby accepts such appointment and agrees to perform the same in accordance with the terms and conditions set forth in this Warrant Agreement.

2. Warrants.

2.1. Form of Warrant. Each Warrant shall be issued in registered form only, shall be in substantially the form of Exhibit A hereto, the provisions of which are incorporated herein, and shall be signed by, or bear the facsimile signature of, the Chief Executive Officer, President, Chief Financial Officer or Treasurer, Secretary or Assistant Secretary of the Company. In the event the person whose facsimile signature has been placed upon any Warrant shall have ceased to serve in the capacity in which such person signed the Warrant before such Warrant is issued, it may be issued with the same effect as if he or she had not ceased to be such at the date of issuance. All of the Warrants shall initially be represented by one or more book-entry certificates (each a "**Book-Entry Warrant Certificate**").

2.2. Effect of Countersignature. Unless and until countersigned by the Warrant Agent pursuant to this Warrant Agreement, a Warrant shall be invalid and of no effect and may not be exercised by a Holder.

2.3. Registration.

2.3.1. Warrant Register. The Warrant Agent shall maintain books ("**Warrant Register**"), for the registration of the original issuance and the registration of any transfer of the Warrants. Upon the initial issuance of the Warrants, the Warrant Agent shall issue and register the Warrants in the names of the respective Holders in such denominations and otherwise in accordance with instructions delivered to the Warrant Agent by the Company. To the extent the Warrants are DTC eligible as of the Issuance Date, all of the Warrants shall be represented by one or more Book-Entry Warrant Certificates deposited with the Depository Trust Company (the "**Depository**") and registered in the name of Cede & Co., a nominee of the Depository. Ownership of beneficial interests in the Book-Entry Warrant Certificates shall be shown on, and the transfer of such ownership shall be effected through, records maintained (i) by the Depository or its nominee for each Book-Entry Warrant Certificate; (ii) by institutions that have accounts with the Depository (such institution, with respect to a Warrant in its account, a "**Participant**"); or (iii) directly on the book-entry records of the Warrant Agent with respect only to owners of beneficial interests that represent such direct registration.

If the Warrants are not DTC eligible as of the Issuance Date or the Depository subsequently ceases to make its book-entry settlement system available for the Warrants, the Company may instruct the Warrant Agent to make other arrangements for book-entry settlement within ten (10) Business Days after the Depository ceases to make its book-entry settlement available. In the event that the Company does not make alternative arrangements for book-entry settlement within ten (10) Business Days or the Warrants are not eligible for, or it is no longer necessary to have the Warrants available in, book-entry form, the Warrant Agent shall provide written instructions to the Depository to deliver to the Warrant Agent for cancellation each Book-Entry Warrant Certificate, and the Company shall instruct the Warrant Agent to deliver to the Depository definitive Warrant Certificates in physical form evidencing such Warrants. Such definitive Warrant Certificates shall be in substantially the form annexed hereto as Exhibit A.

As used herein, the term "**Business Day**" means any day other than Saturday, Sunday or other day on which commercial banks in the City of New York are authorized or required by law or executive order to remain closed.

2.3.2. Beneficial Owner; Registered Holder. Prior to due presentment for registration of transfer of any Warrant, the Company and the Warrant Agent may deem and treat the person in whose name such Warrant shall be registered upon the Warrant Register ("**registered holder**"), as the absolute owner of such Warrant and of each Warrant represented thereby (notwithstanding any notation of ownership or other writing on the Warrant Certificate made by anyone other than the Company or the Warrant Agent), for the purpose of any exercise thereof, and for all other purposes, and neither the Company nor the Warrant Agent shall be affected by any notice to the contrary. Any person in whose name ownership of a beneficial interest in the Warrants evidenced by a Book-Entry Warrant Certificate is recorded in the records maintained by the Depository or its nominee shall be deemed the "beneficial owner" thereof; *provided*, that all such beneficial interests shall be held through a Participant which shall be the registered holder of such Warrants. As used herein, the term "**Holder**" refers only to a registered holder of the Warrants.

2.4. Uncertificated Warrants. Notwithstanding the foregoing and anything else herein to the contrary, the Warrants may be issued in uncertificated form.

3. Terms and Exercise of Warrants.

3.1. Exercise Price. Each Warrant shall, when countersigned by the Warrant Agent, entitle the Holder, subject to the provisions of such Warrant and of this Warrant Agreement, to purchase from the Company the number of shares of Common Stock stated therein, at the price of $_____ per share, subject to the subsequent adjustments provided in Section 4 hereof. The term "**Exercise Price**" as used in this Warrant Agreement refers to the price per share at which Common Stock may be purchased at the time a Warrant is exercised.

3.2. Duration of Warrants. A Warrant may be exercised only during the period (" **Exercise Period**") commencing on the Issuance Date and terminating at 5:00 P.M., New York City time on _____, 2023 (" **Expiration Date**"). Each Warrant not exercised on or before the Expiration Date shall become void, and all rights thereunder and all rights in respect thereof under this Warrant Agreement shall cease at the close of business on the Expiration Date.

3.3. Exercise of Warrants.

3.3.1. Exercise and Payment. A Holder may exercise a Warrant by delivering, not later than 5:00 P.M., New York City time, on any Business Day during the Exercise Period (the "**Exercise Date**") to the Warrant Agent at its corporate trust department (i) the Warrant Certificate evidencing the Warrants to be exercised, or, in the case of a Book-Entry Warrant Certificate, the Warrants to be exercised (the "**Book-Entry Warrants**") shown on the records of the Depository to an account of the Warrant Agent at the Depository designated for such purpose in writing by the Warrant Agent to the Depository from time to time, (ii) an election to purchase the Warrant Shares underlying the Warrants to be exercised (an "**Election to Purchase**"), properly completed and executed by the Holder on the reverse of the Warrant Certificate or, in the case of a Book-Entry Warrant Certificate, properly delivered by the Participant in accordance with the Depository's procedures, and (iii) the Exercise Price for each Warrant to be exercised in lawful money of the United States of America by certified or official bank check or by bank wire transfer in immediately available funds payable to the Warrant Agent.

If any of (A) the Warrant Certificate or the Book-Entry Warrants, (B) the Election to Purchase, or (C) the Exercise Price therefor, is received by the Warrant Agent after 5:00 P.M., New York City time, on the specified Exercise Date, the Warrants will be deemed to be received and exercised on the Business Day next succeeding the Exercise Date. If the date specified as the Exercise Date is not a Business Day, the Warrants will be deemed to be received and exercised on the next succeeding day that is a Business Day. If the Warrants are received or deemed to be received after the Expiration Date, the exercise thereof will be null and void and any funds delivered to the Warrant Agent will be returned to the Holder. In no event will interest accrue on funds deposited with the Warrant Agent in respect of an exercise or attempted exercise of Warrants. The validity of any exercise of Warrants will be determined by the Company in its sole discretion and such determination will be final and binding upon the Holder and the Warrant Agent. Neither the Company nor the Warrant Agent shall have any obligation to inform a Holder of the invalidity of any exercise of any Warrants.

The Warrant Agent shall promptly deposit all funds received by it in payment of the Exercise Price in the account of the Company maintained with the Warrant Agent for such purpose and shall advise the Company via telephone at the end of each day on which funds for the exercise of the Warrants are received of the amount so deposited to its account. The Warrant Agent shall promptly confirm such telephonic advice to the Company in writing.

3.3.2. Issuance of Certificates. The Warrant Agent shall, by 1:00 P.M. New York City time on the Business Day following the Exercise Date of any Warrant, advise the Company or the transfer agent and registrar in respect of (a) the number of Warrant Shares issuable upon such exercise in accordance with the terms and conditions of this Warrant Agreement, (b) the instructions of each Holder with respect to delivery of the Warrant Shares issuable upon such exercise, and the delivery of definitive Warrant Certificates, as appropriate, evidencing the balance, if any, of the Warrants remaining after such exercise, (c) in case of a Book-Entry Warrant Certificate, the notation that shall be made to the records maintained by the Depository, its nominee for each Book-Entry Warrant Certificate, or a Participant, as appropriate, evidencing the balance, if any, of the Warrants remaining after such exercise and (d) such other information as the Company or such transfer agent and registrar shall reasonably require.

The Company shall, by 5:00 P.M., New York City time, on the third Business Day next succeeding the Exercise Date of any Warrant and the clearance of the funds in payment of the aggregate Exercise Price, execute, issue and deliver to the Warrant Agent, the Warrant Shares to which such Holder is entitled, in fully registered form, registered in such name or names as may be directed by such Holder. Upon receipt of such Warrant Shares, the Warrant Agent shall, by 5:00 P.M., New York City time, on the third Business Day next succeeding such Exercise Date, transmit such Warrant Shares to, or upon the order of, such Holder.

In lieu of delivering physical certificates representing the Warrant Shares issuable upon exercise of any Warrants, provided the Company's transfer agent is participating in the Depository's Fast Automated Securities Transfer program, the Company shall use its commercially reasonable efforts to cause its transfer agent to electronically transmit the Warrant Shares issuable upon exercise to the Depository by crediting the account of the Depository or of the Participant, as the case may be, through its Deposit Withdrawal Agent Commission system. The time periods for delivery described in the immediately preceding paragraph shall apply to the electronic transmittals described herein.

Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender a Warrant to the Company. Partial exercises of a Warrant resulting in purchases of a portion of the total number of Warrant Shares available thereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Business Day of receipt of such notice. **The Holder and any assignee, by acceptance of a Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face thereof.**

3.3.3. Valid Issuance. All Warrant Shares issued upon the proper exercise of a Warrant in conformity with this Warrant Agreement (including payment of the applicable Exercise Price) shall be validly issued, fully paid and nonassessable.

3.3.4. No Fractional Exercise. Warrants may be exercised only in whole numbers of Warrant Shares. No fractional Warrant Shares are to be issued upon the exercise of a Warrant, but rather the number of Warrant Shares to be issued shall be rounded up or down, as applicable, to the nearest whole number. If fewer than all of the Warrants evidenced by a Warrant Certificate are exercised, a new Warrant Certificate for the number of unexercised Warrants remaining shall be executed by the Company and countersigned by the Warrant Agent as provided in Section 2 of this Warrant Agreement, and delivered to the Holder at the address specified on the books of the Warrant Agent or as otherwise specified by such Holder. If fewer than all of the Warrants evidenced by a Book-Entry Warrant Certificate are exercised, a notation shall be made to the records maintained by the Depository, its nominee for each Book-Entry Warrant Certificate, or a Participant, as appropriate, evidencing the balance of the Warrants remaining after such exercise.

3.3.5. No Transfer Taxes. The Company shall not be required to pay any stamp or other tax or governmental charge required to be paid in connection with any transfer involved in the issue of the Warrant Shares upon the exercise of Warrants; and in the event that any such transfer is involved, the Company shall not be required to issue or deliver any Warrant Shares until such tax or other charge shall have been paid or it has been established to the Company's satisfaction that no such tax or other charge is due.

3.3.6. Date of Issuance. Each person in whose name any such certificate for Warrant Shares is issued shall for all purposes be deemed to have become the holder of record of such shares on the date on which the applicable Warrant was surrendered and payment of the Exercise Price was made, irrespective of the date of delivery of any such certificate, except that, if the date of such surrender and payment is a date when the stock transfer books of the Company are closed, such person shall be deemed to have become the holder of record of such shares at the close of business on the next succeeding date on which the stock transfer books are open.

3.3.7. Cashless Exercise Under Certain Circumstances.

(i) The Company shall provide to the Holder prompt written notice of any time that the Company is unable to issue the Warrant Shares via DTC transfer or otherwise (without restrictive legend), because (A) the Commission has issued a stop order with respect to the Registration Statement, (B) the Commission otherwise has suspended or withdrawn the effectiveness of the Registration Statement, either temporarily or permanently, (C) the Company has suspended or withdrawn the effectiveness of the Registration Statement, either temporarily or permanently, or (D) otherwise (each a "**Restrictive Legend Event**"). To the extent that a Restrictive Legend Event occurs after the Holder has exercised a Warrant in accordance with the terms of the Warrants but prior to the delivery of the Warrant Shares, the Company shall, at the election of the Holder to be given within five (5) Business Days of receipt of notice of the Restrictive Legend Event, either (A) rescind the previously submitted Election to Purchase and the Company shall return all consideration paid by the Holder for such shares upon such rescission or (B) treat the attempted exercise as a cashless exercise as described in the next paragraph and refund the cash portion of the Exercise Price to the Holder.

(ii) If a Restrictive Legend Event has occurred and no exemption from the registration requirements is available, the Warrants shall only be exercisable on a cashless basis. Notwithstanding anything herein to the contrary, the Company shall not under any circumstances be required to make any cash payments or net cash settlement to the Holder in lieu of issuance of the Warrant Shares and, accordingly, any or all of the Warrants may expire worthless. Upon a " **cashless exercise**," the Holder shall be entitled to receive a certificate (or book entry) for the number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = the VWAP on the Business Day immediately preceding the date on which the Holder elects to exercise the Warrant by means of a "cashless exercise," as set forth in the applicable Election to Purchase;

(B) = the Exercise Price, as it may have been adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of the Warrant in accordance with the terms of the Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

Upon receipt of an Election to Purchase for a cashless exercise, the Warrant Agent will promptly deliver a copy of the Election to Purchase to the Company to confirm the number of Warrant Shares issuable in connection with the cashless exercise. The Company shall calculate and transmit to the Warrant Agent, and the Warrant Agent shall have no obligation under this section to calculate, the number of Warrant Shares issuable in connection with the cashless exercise.

"**VWAP**" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on NYSE AMEX, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (each, a "**Trading Market**"), the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a trading day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time) on any day that the Trading Market on which the Common Stock is then listed is open for trading), (b) the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the OTC Bulletin Board, (c) if the Common Stock is not then listed or quoted for trading on the OTC Bulletin Board and if prices for the Common Stock are then reported in the "Pink Sheets" published by OTC Markets, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by the Company's Board of Directors in good faith.

3.3.8. Disputes. In the case of a dispute as to the determination of the Exercise Price or the arithmetic calculation of the Warrant Shares, the Company shall promptly issue to the applicable Holders the number of Warrant Shares that are not disputed.

4. Adjustments.

4.1. Adjustment upon Subdivision or Combination of Common Stock. If the Company at any time after the Issuance Date subdivides (by any stock split, stock dividend, recapitalization, reorganization, scheme, arrangement or otherwise) its outstanding shares of Common Stock into a greater number of shares, the Exercise Price in effect immediately prior to such subdivision will be proportionately reduced and the number of Warrant Shares will be proportionately increased. If the Company at any time after the Issuance Date combines (by any stock split, stock dividend, recapitalization, reorganization, scheme, arrangement or otherwise) its outstanding shares of Common Stock into a smaller number of shares, the Exercise Price in effect immediately prior to such combination will be proportionately increased and the number of Warrant Shares will be proportionately decreased. Any adjustment under this Section 4.1 shall become effective at the close of business on the date the subdivision or combination becomes effective. The Company shall promptly notify Warrant Agent of any such adjustment and give specific instructions to Warrant Agent with respect to any adjustments to the Warrant Register.

4.2. Adjustment for Other Distributions. In the event the Company shall fix a record date for the making of a dividend or distribution to all holders of Common Stock of any evidences of indebtedness or assets or subscription rights or warrants (excluding those referred to in Section 4.1 or other dividends paid out of retained earnings), then in each such case the Exercise Price shall be adjusted by multiplying the Exercise Price in effect immediately prior to the record date fixed for determination of stockholders entitled to receive such distribution by a fraction of which the denominator shall be the VWAP determined as of the record date mentioned above, and of which the numerator shall be such VWAP on such record date less the then per share fair market value at such record date of the portion of such assets or evidence of indebtedness so distributed applicable to one outstanding share of the Common Stock as determined by the Company's Board of Directors in good faith. In either case the adjustments shall be described in a statement provided to each Holder of the portion of assets or evidences of indebtedness so distributed or such subscription rights applicable to one share of Common Stock. Such adjustment shall be made whenever any such distribution is made and shall become effective immediately after the record date mentioned above.

4.3. Reclassification, Consolidation, Purchase, Combination, Sale or Conveyance. If, at any time while the Warrants are outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another person whereby such other person acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other person or other persons making or party to, or associated or affiliated with the other persons making or party to, such stock or share purchase agreement or other business combination) (each a "**Fundamental Transaction**"), then, upon any subsequent exercise of a Warrant, each Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, the same amount and kind of securities, cash or property, if any, of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "**Alternate Consideration**") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which each Warrant is exercisable immediately prior to such Fundamental Transaction. For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration that such Holder receives upon any exercise of each Warrant following such Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "**Successor Entity**") and for which stockholders received any equity securities of the Successor Entity, to assume in writing all of the obligations of the Company under this Warrant Agreement in accordance with the provisions of this Section 4.3 pursuant to written agreements and shall, upon the written request of such Holder, deliver to such Holder in exchange for the applicable Warrants created by this Warrant Agreement a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to the Warrants which are exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity), if any, plus any Alternate Consideration, receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which the Warrants are exercisable immediately prior to such Fundamental Transaction, and with an exercise price which applies the Exercise Price hereunder to such shares of capital stock, if any, plus any Alternate Consideration (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of such Warrant immediately prior to the consummation of such Fundamental Transaction). Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant Agreement and the Warrants referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant Agreement and the Warrants with the same effect as if such Successor Entity had been named as the Company herein and therein.

The Company shall instruct the Warrant Agent to mail, by first class mail, postage prepaid, to each Holder, written notice of the execution of any such amendment, supplement to this Warrant Agreement and/or the Warrants or other agreement. Any such amendment, supplement or other agreement entered into by the Successor Entity shall provide for adjustments, which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Section 4. The Warrant Agent shall be under no responsibility to determine the correctness of any provisions contained in such amendment, supplement or other agreement relating either to the kind or amount of securities or other property receivable upon exercise of the Warrants or with respect to the method employed and provided therein for any adjustments and shall be entitled to rely upon the provisions contained in any such amendment, supplement or other agreement. The provisions of this Section 4.3 shall similarly apply to successive reclassifications, changes, consolidations, mergers, sales and conveyances of the kind described above.

4.4. Other Events. If any event occurs of the type contemplated by the provisions of Section 4.1, 4.2 or 4.3 but not expressly provided for by such provisions (including, without limitation, the granting of stock appreciation rights, phantom stock rights or other rights with equity features to all holders of Common Stock for no consideration), then the Company's Board of Directors will in good faith make an adjustment in the Exercise Price and the number of Warrant Shares so as to protect the rights of each Holder pursuant to this Warrant Agreement.

4.5. Notices of Changes in Warrant. Upon every adjustment of the Exercise Price or the number of Warrant Shares, the Company shall give written notice thereof to the Warrant Agent, which notice shall state the Exercise Price resulting from such adjustment and the increase or decrease, if any, in the number of Warrant Shares purchasable upon the exercise of a Warrant, setting forth in reasonable detail the method of calculation and the facts upon which such calculation is based. Upon the occurrence of any event specified in Sections 4.1, 4.2 or 4.3, then, in any such event, the Company shall give written notice to each Holder, at the last address set forth for such Holder in the Warrant Register, of the record date or the effective date of the event. Failure to give such notice, or any defect therein, shall not affect the legality or validity of such event.

4.6. No Fractional Shares. Notwithstanding any provision contained in this Warrant Agreement to the contrary, the Company shall not issue fractional shares upon exercise of Warrants. If, by reason of any adjustment made pursuant to this Section 4, a Holder would be entitled, upon the exercise of such Warrant, to receive a fractional interest in a share, the Company shall, upon such exercise, round up or down, as applicable, to the nearest whole number the number of Warrant Shares to be issued to such Holder.

4.7. Form of Warrant. The form of Warrant annexed hereto as Exhibit A need not be changed because of any adjustment pursuant to this Section 4, and Warrants issued after such adjustment may state the same Exercise Price and the same number of shares as is stated in the Warrants initially issued pursuant to this Warrant Agreement. However, the Company may at any time in its sole discretion make any change in the form of Warrant that the Company may deem appropriate and that does not affect the substance thereof, and any Warrant thereafter issued or countersigned, whether in exchange or substitution for an outstanding Warrant or otherwise, may be in the form as so changed.

5. Transfer and Exchange of Warrants.

5.1. Registration of Transfer. The Warrant Agent shall register the transfer, from time to time, of any outstanding Warrant upon the Warrant Register, upon surrender of such Warrant for transfer, properly endorsed with signatures properly guaranteed and accompanied by appropriate instructions for transfer. Upon any such transfer, a new Warrant representing an equal aggregate number of Warrants shall be issued and the old Warrant shall be cancelled by the Warrant Agent. The Warrants so cancelled shall be delivered by the Warrant Agent to the Company from time to time upon request.

5.2. Procedure for Surrender of Warrants. Warrants may be surrendered to the Warrant Agent, together with a written request for exchange or transfer reasonably acceptable to Warrant Agent, duly executed by the Holder thereof, or by a duly authorized attorney, and thereupon the Warrant Agent shall issue in exchange therefor one or more new Warrants as requested by the Holder of the Warrants so surrendered, representing an equal aggregate number of Warrants; provided, however, that except as otherwise provided herein or in any Book-Entry Warrant Certificate, each Book-Entry Warrant Certificate may be transferred only in whole and only to the Depository, to another nominee of the Depository, to a successor depository, or to a nominee of a successor depository; provided further, however, that in the event that a Warrant surrendered for transfer bears a restrictive legend, the Warrant Agent shall not cancel such Warrant and issue new Warrants in exchange therefor until the Warrant Agent has received an opinion of counsel for the Company stating that such transfer may be made and indicating whether the new Warrants must also bear a restrictive legend. Upon any such registration of transfer, the Company shall execute, and the Warrant Agent shall countersign and deliver, in the name of the designated transferee a new Warrant Certificate or Warrant Certificates of any authorized denomination evidencing in the aggregate a like number of unexercised Warrants.

5.3. Fractional Warrants. The Warrant Agent shall not be required to effect any registration of transfer or exchange which will result in the issuance of a Warrant Certificate for a fraction of a Warrant.

5.4. Service Charges. A service charge shall be made for any exchange or registration of transfer of Warrants, as negotiated between Company and Warrant Agent.

5.5. Warrant Execution and Countersignature. The Warrant Agent is hereby authorized to countersign and to deliver, in accordance with the terms of this Warrant Agreement, the Warrants required to be issued pursuant to the provisions of this Section 5, and the Company, whenever required by the Warrant Agent, will supply the Warrant Agent with Warrants duly executed on behalf of the Company for such purpose.

6. Limitations on Exercise. Neither the Warrant Agent nor the Company shall effect any exercise of any Warrant, and no Holder shall have the right to exercise any portion of a Warrant, to the extent that after giving effect to the issuance of shares of Common Stock after exercise as set forth on the applicable Election to Purchase, such Holder (together with such Holder's Affiliates (as defined in Rule 405 under the Securities Act), and any other persons acting as a group together with such Holder or any of such Holder's Affiliates), would beneficially own in excess of 4.99% of the Company's Common Stock. For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by a Holder and its Affiliates shall include the number of shares of Common Stock issuable upon exercise of the Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon exercise of the remaining, nonexercised portion of any Warrant beneficially owned by such Holder or any of its Affiliates. Except as set forth in the preceding sentence, for purposes of this Section 6, beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**") and the rules and regulations promulgated thereunder, it being acknowledged by each Holder that neither the Warrant Agent nor the Company is representing to such Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and such Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 6 applies, the determination of whether a Warrant is exercisable (in relation to other securities owned by a Holder together with any Affiliates) and of which portion of a Warrant is exercisable shall be in the sole discretion of a Holder, and the submission of an Election to Purchase shall be deemed to be such Holder's determination of whether such Warrant is exercisable (in relation to other securities owned by such Holder together with any Affiliates) and of which portion of a Warrant is exercisable, and neither the Warrant Agent nor the Company shall have any obligation to verify or confirm the accuracy of such determination and neither of them shall have any liability for any error made by such Holder. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 6, in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding. The provisions of this Section 6 shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 6 to correct this subsection (or any portion hereof) which may be defective or inconsistent with the intended beneficial ownership limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor Holder.

7. Other Provisions Relating to Rights of Holders of Warrants.

7.1. No Rights as Stockholder. Except as otherwise specifically provided herein, a Holder, solely in its capacity as an owner of a Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant Agreement be construed to confer upon a Holder, solely in its capacity as the owner of a Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which it is then entitled to receive upon the due exercise of a Warrant. For the avoidance of doubt, ownership of a Warrant does not entitle the Holder or any beneficial owner thereof to any of the rights of a stockholder.

7.2. Lost, Stolen, Mutilated, or Destroyed Warrants. If any Warrant is lost, stolen, mutilated, or destroyed, the Company and the Warrant Agent may on such terms as to indemnity (including obtaining an open penalty bond protecting the Warrant Agent) or otherwise as they may in their discretion impose (which shall, in the case of a mutilated Warrant, include the surrender thereof), issue a new Warrant of like denomination, tenor, and date as the Warrant so lost, stolen, mutilated, or destroyed. Any such new Warrant shall constitute a substitute contractual obligation of the Company, whether or not the allegedly lost, stolen, mutilated, or destroyed Warrant shall be at any time enforceable by anyone.

7.3. Reservation of Common Stock. The Company shall at all times reserve and keep available a number of its authorized but unissued shares of Common Stock that will be sufficient to permit the exercise in full of all outstanding Warrants issued pursuant to this Warrant Agreement.

8. Concerning the Warrant Agent and Other Matters.

8.1. Concerning the Warrant Agent. The Warrant Agent:

a) shall have no duties or obligations other than those set forth herein and no duties or obligations shall be inferred or implied except as may subsequently be agreed to in writing by the Warrant Agent and the Company;

b) may rely on and shall be held harmless by the Company in acting upon any certificate, statement, instrument, opinion, notice, letter, facsimile transmission or other document, or any security delivered to it, and reasonably believed by it to be genuine and to have been made or signed by the proper party or parties;

c) may rely on and shall be held harmless by the Company in acting upon written instructions from the Company with respect to any matter relating to its acting as Warrant Agent;

d) may consult with counsel satisfactory to it (including counsel for the Company) and shall be held harmless by the Company in relying on the advice or opinion of such counsel in respect of any action taken, suffered or omitted by it hereunder in good faith and in accordance with such advice or opinion of such counsel;

e) solely shall make the final determination as to whether or not a Warrant received by Warrant Agent is duly, completely and correctly executed, and Warrant Agent shall be held harmless by the Company in respect of any action taken, suffered or omitted by Warrant Agent hereunder in good faith and in accordance with its determination;

f) shall not be obligated to take any legal or other action hereunder which might, in its reasonable judgment, subject or expose it to any expense or liability unless it shall have been furnished with an indemnity satisfactory to it; and

g) shall not be liable or responsible for any failure of the Company to comply with any of the Company's obligations relating to the Registration Statement or this Warrant Agreement, including without limitation obligations under applicable regulation or law.

8.2. Payment of Taxes. The Company will from time to time promptly pay all taxes and charges that may be imposed upon the Company or the Warrant Agent in respect of the issuance or delivery of Warrant Shares upon the exercise of Warrants, but the Company shall not be obligated to pay any transfer taxes in respect of the Warrants or such Warrant Shares. The Warrant Agent shall not register any transfer or issue or deliver any Warrant Certificate(s) or Warrant Shares unless or until the persons requesting the registration or issuance shall have paid to the Warrant Agent for the account of the Company the amount of such tax, if any, or shall have established to the reasonable satisfaction of the Company that such tax, if any, has been paid.

8.3. Resignation, Consolidation, or Merger of Warrant Agent.

8.3.1. Appointment of Successor Warrant Agent. The Warrant Agent, or any successor to it hereafter appointed, may resign its duties and be discharged from all further duties and liabilities hereunder after giving sixty (60) calendar days' notice in writing to the Company. If the office of the Warrant Agent becomes vacant by resignation or incapacity to act or otherwise, the Company shall appoint in writing a successor Warrant Agent in place of the Warrant Agent. If the Company shall fail to make such appointment within a period of thirty (30) calendar days after it has been notified in writing of such resignation or incapacity by the Warrant Agent or by the Holder (who shall, with such notice, submit such Holder's Warrants for inspection by the Company), then such Holder may apply to the Supreme Court of the State of New York for the County of New York for the appointment of a successor Warrant Agent, the expenses of which shall be paid by the Company. Any successor Warrant Agent (but not including the initial Warrant Agent), whether appointed by the Company or by such court, shall be a corporation organized and existing under the laws of the State of New York, in good standing and having its principal office in the Borough of Manhattan, City of New York and State of New York, and authorized under such laws to exercise corporate trust powers and subject to supervision or examination by federal or state authority. After appointment, any successor Warrant Agent shall be vested with all the authority, powers, rights, immunities, duties, and obligations of its predecessor Warrant Agent with like effect as if originally named as Warrant Agent hereunder, without any further act or deed; but if for any reason it becomes necessary or appropriate, the predecessor Warrant Agent shall execute and deliver, at the expense of the Company, an instrument transferring to such successor Warrant Agent all the authority, powers, and rights of such predecessor Warrant Agent hereunder; and upon request of any successor Warrant Agent the Company shall make, execute, acknowledge, and deliver any and all instruments in writing for more fully and effectually vesting in and confirming to such successor Warrant Agent all such authority, powers, rights, immunities, duties, and obligations.

8.3.2. Notice of Successor Warrant Agent. In the event a successor Warrant Agent shall be appointed, the Company shall give notice thereof to the predecessor Warrant Agent and the transfer agent for the Common Stock not later than the effective date of any such appointment.

8.3.3. Merger or Consolidation of Warrant Agent. Any corporation into which the Warrant Agent may be merged or with which it may be consolidated or any corporation resulting from any merger or consolidation to which the Warrant Agent shall be a party shall be the successor Warrant Agent under this Warrant Agreement without any further act.

8.4. Fees and Expenses of Warrant Agent.

8.4.1. Remuneration. The Company agrees to pay the Warrant Agent reasonable remuneration in an amount separately agreed to between Company and Warrant Agent for its services as Warrant Agent hereunder and will reimburse the Warrant Agent upon demand for all expenditures that the Warrant Agent may reasonably incur in the execution of its duties hereunder.

8.4.2. Further Assurances. The Company agrees to perform, execute, acknowledge, and deliver or cause to be performed, executed, acknowledged, and delivered all such further and other acts, instruments, and assurances as may reasonably be required by the Warrant Agent for the carrying out or performing of the provisions of this Warrant Agreement.

8.5. Liability of Warrant Agent.

8.5.1. Reliance on Company Statement. Whenever in the performance of its duties under this Warrant Agreement, the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a statement signed by the President, Chief Executive Officer or Chief Financial Officer of the Company and delivered to the Warrant Agent. The Warrant Agent may rely upon such statement for any action taken or suffered in good faith by it pursuant to the provisions of this Warrant Agreement.

8.5.2. Indemnity. The Warrant Agent shall be liable hereunder only for its own gross negligence, willful misconduct or bad faith. The Company agrees to indemnify the Warrant Agent and save it harmless against any and all liabilities, including judgments, claims, losses, damages, costs and reasonable counsel fees, for anything done or omitted by the Warrant Agent in the execution of this Warrant Agreement except as a result of the Warrant Agent's gross negligence, willful misconduct, or bad faith.

8.5.3. Limitation of Liability. The Warrant Agent's aggregate liability, if any, during the term of this Warrant Agreement with respect to, arising from, or arising in connection with this Warrant Agreement, or from all services provided or omitted to be provided under this Warrant Agreement, whether in contract, or in tort, or otherwise, is limited to, and shall not exceed, the amounts paid or payable hereunder by the Company to Warrant Agent as fees and charges (not including reimbursable expenses).

8.5.4. Disputes. In the event any question or dispute arises with respect to the proper interpretation of this Warrant Agreement or the Warrant Agent's duties hereunder or the rights of the Company or of any Holder, the Warrant Agent shall not be required to act and shall not be held liable or responsible for refusing to act until the question or dispute has been judicially settled (and the Warrant Agent may, if it deems it advisable, but shall not be obligated to, file a suit in interpleader or for a declaratory judgment for such purpose) by final judgment rendered by a court of competent jurisdiction, binding on all parties interested in the matter which is no longer subject to review or appeal, or settled by a written document in form and substance satisfactory to the Warrant Agent and executed by the Company and each other interested party. In addition, the Warrant Agent may require for such purpose, but shall not be obligated to require, the execution of such written settlement by all of the Holders of the Warrants and all other parties that may have an interest in the settlement.

8.5.5. Exclusions. The Warrant Agent shall have no responsibility with respect to the validity of this Warrant Agreement or with respect to the validity or execution of any Warrant (except its countersignature hereof and thereof); nor shall it be responsible for any breach by the Company of any covenant or condition contained in this Warrant Agreement or in any Warrant; nor shall it be responsible to make any adjustments required under the provisions of Section 4 hereof or responsible for the manner, method, or amount of any such adjustment or the ascertaining of the existence of facts that would require any such adjustment; nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any Warrant Shares to be issued pursuant to this Warrant Agreement or any Warrant or as to whether any Warrant Shares will, when issued, be validly issued and fully paid and nonassessable.

8.6. Acceptance of Agency. The Warrant Agent hereby accepts the agency established by this Warrant Agreement and agrees to perform the same upon the terms and conditions herein set forth and, among other things, shall account promptly to the Company with respect to Warrants exercised and concurrently account for, and pay to the Company, all moneys received by the Warrant Agent for the purchase of Warrant Shares through the exercise of Warrants.

9. Miscellaneous Provisions.

9.1. Successors. All the covenants and provisions of this Warrant Agreement by or for the benefit of the Company or the Warrant Agent shall bind and inure to the benefit of their respective successors and assigns.

9.2. Notices. Any notice, statement or demand authorized by this Warrant Agreement to be given or made by the Warrant Agent or by a Holder to or on the Company shall be sufficiently given when so delivered if by hand or overnight delivery or if sent by certified mail or private courier service within five (5) Business Days after deposit of such notice, postage prepaid, addressed (until another address is filed in writing by the Company with the Warrant Agent), as follows:

Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080

Attn: Chief Executive Officer

Any notice, statement or demand authorized by this Warrant Agreement to be given or made by the a Holder or by the Company to or on the Warrant Agent shall be sufficiently given when so delivered if by hand or overnight delivery or if sent by certified mail or private courier service within five (5) Business Days after deposit of such notice, postage prepaid, addressed (until another address is filed in writing by the Warrant Agent with the Company), as follows:

Continental Stock Transfer & Trust Company
1 State Street, 30th Floor
New York, New York 10004
Attn: [_____]

with a copy in each case to:

Loeb & Loeb LLP
345 Park Avenue
New York, New York 10154
Attn: Fran Stoller, Esq.

and:

A.G.P./Alliance Global Partners
590 Madison Avenue
New York, NY 10022
Attn: Compliance Department
and:

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
666 Third Avenue
New York, NY 10017
Attn: Anthony J. Marsico, Esq.

9.3. Applicable Law. The validity, interpretation, and performance of this Warrant Agreement and of the Warrants shall be governed in all respects by the laws of the State of New York, without giving effect to conflicts of law principles that would result in the application of the substantive laws of another jurisdiction. The Company hereby agrees that any action, proceeding or claim against it arising out of or relating in any way to this Warrant Agreement shall be brought and enforced in the courts of the State of New York or the United States District Court for the Southern District of New York, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenience forum. Any such process or summons to be served upon the Company may be served by transmitting a copy thereof by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 9.2 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the Company in any action, proceeding or claim.

9.4. Persons Having Rights under this Warrant Agreement. Nothing in this Warrant Agreement expressed and nothing that may be implied from any of the provisions hereof is intended, or shall be construed, to confer upon, or give to, any person or corporation other than the parties hereto and the Holders of the Warrants and, for purposes of Sections 9.3 and 9.8, the Underwriters, any right, remedy, or claim under or by reason of this Warrant Agreement or of any covenant, condition, stipulation, promise, or agreement hereof. The Underwriters shall be deemed to be an express third-party beneficiary of this Warrant Agreement with respect to Sections 9.3 and 9.8 hereof. All covenants, conditions, stipulations, promises, and agreements contained in this Warrant Agreement shall be for the sole and exclusive benefit of the parties hereto (and the Underwriters with respect to the Sections [3.3], 9.3 and 9.8 hereof) and their successors and assigns and of the Holders.

9.5. Examination of this Warrant Agreement. A copy of this Warrant Agreement shall be available at all reasonable times at the office of the Warrant Agent designated for such purpose for inspection by any Holder. The Warrant Agent may require any such Holder to submit his Warrant for inspection by it.

9.6. Counterparts. This Warrant Agreement may be executed in any number of original or facsimile counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument.

9.7. Effect of Headings. The Section headings herein are for convenience only and are not part of this Warrant Agreement and shall not affect the interpretation thereof.

9.8. Amendments. This Warrant Agreement may be amended by the parties hereto without the consent of any Holder for the purpose of curing any ambiguity, or of curing, correcting or supplementing any defective provision contained herein or adding or changing any other provisions with respect to matters or questions arising under this Warrant Agreement as the parties may deem necessary or desirable and that the parties deem shall not adversely affect the interest of the Holders. All other modifications or amendments, including any amendment to increase the Exercise Price or shorten the Exercise Period, shall require the written consent of the Underwriters and the Holders of a majority of the then outstanding Warrants.

9.9. Severability. This Warrant Agreement shall be deemed severable, and the invalidity or unenforceability of any term or provision hereof shall not affect the validity or enforceability of this Warrant Agreement or of any other term or provision hereof. Furthermore, in lieu of any such invalid or unenforceable term or provision, the parties hereto intend that there shall be added as a part of this Warrant Agreement a provision as similar in terms to such invalid or unenforceable provision as may be possible and be valid and enforceable.

9.10. Force Majeure. In the event either party is unable to perform its obligations under the terms of this Warrant Agreement because of acts of God, strikes, failure of carrier or utilities, equipment or transmission failure or damage that is reasonably beyond its control, or any other cause that is reasonably beyond its control, such party shall not be liable for damages to the other for any damages resulting from such failure to perform or otherwise from such causes. Performance under this Warrant Agreement shall resume when the affected party or parties are able to perform substantially that party's duties.

9.11. Consequential Damages. Notwithstanding anything in this Warrant Agreement to the contrary, neither party to this Warrant Agreement shall be liable to the other party for any consequential, indirect, special or incidental damages under any provision of this Warrant Agreement or for any consequential, indirect, punitive, special or incidental damages arising out of any act or failure to act hereunder even if that party has been advised of or has foreseen the possibility of such damages.

[*Signature Page Follows*]

IN WITNESS WHEREOF, this Warrant Agreement has been duly executed by the parties hereto as of the day and year first above written.

TITAN PHARMACEUTICALS, INC.

By: _____
Name:
Title:

CONTINENTAL STOCK TRANSFER & TRUST COMPANY

By: _____
Name:
Title:

Exhibit A

[FORM OF WARRANT CERTIFICATE]

EXERCISABLE ONLY IF COUNTERSIGNED BY THE WARRANT AGENT AS PROVIDED HEREIN.

Warrant Certificate Evidencing Warrants to Purchase
Common Stock, par value of $0.001 per share, as described herein.

TITAN PHARMACEUTICALS, INC.

No. _____

**VOID AFTER 5:00 P.M., NEW YORK CITY TIME,
ON _____ __, 2023**

This certifies that _____ or registered assigns is the registered holder (the "**Holder**") of _____ warrants to purchase certain securities (each a "**Warrant**"). Each Warrant entitles the Holder, subject to the provisions contained herein and in the Warrant Agreement (as defined below), to purchase from Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), one share (collectively, the "**Warrant Shares**") of Common Stock, par value $0.001 per share, of the Company ("**Common Stock**"), at the Exercise Price set forth below. The price per share at which each Warrant Share may be purchased at the time each Warrant is exercised (the "**Exercise Price**") is $_____ initially, subject to adjustments as set forth in the Warrant Agreement (as defined below).

This Warrant Certificate is issued under and in accordance with the Warrant Agency Agreement, dated as of _____, 2018 (the "**Warrant Agreement**"), between the Company and the Warrant Agent, and is subject to the terms and provisions contained in the Warrant Agreement, to all of which terms and provisions the Holder of this Warrant Certificate and the beneficial owners of the Warrants represented by this Warrant Certificate consent by acceptance hereof. Copies of the Warrant Agreement are on file and can be inspected at the below-mentioned office of the Warrant Agent and at the office of the Company at 400 Oyster Point Blvd., Suite 505, South San Francisco, California 94080. Capitalized terms used but not defined herein shall have the meaning ascribed to them in the Warrant Agreement.

Subject to the terms of the Warrant Agreement, each Warrant evidenced hereby may be exercised in whole but not in part at any time, as specified herein, on any Business Day (as defined below) occurring during the period (the "**Exercise Period**") commencing on the Issuance Date and terminating at 5:00 P.M., New York City time, on _____, 2023 (the "**Expiration Date**"). Each Warrant remaining unexercised after 5:00 P.M., New York City time, on the Expiration Date shall become void, and all rights of the Holder of this Warrant Certificate evidencing such Warrant shall cease.

The Holder of the Warrants represented by this Warrant Certificate may exercise any Warrant evidenced hereby by delivering, not later than 5:00 P.M., New York City time, on any Business Day during the Exercise Period (the "**Exercise Date**") to Continental Stock Transfer & Trust Co. (the "**Warrant Agent**", which term includes any successor warrant agent under the Warrant Agreement described below) at its corporate trust department at 1 State Street, 30th Floor, New York, New York 10004, (i) this Warrant Certificate or, in the case of a Book-Entry Warrant Certificate (as defined in the Warrant Agreement), the Warrants to be exercised (the "**Book-Entry Warrants**") as shown on the records of The Depository Trust Company (the "**Depository**") to an account of the Warrant Agent at the Depository designated for such purpose in writing by the Warrant Agent to the Depository, (ii) an election to purchase ("**Election to Purchase**"), properly executed by the Holder hereof on the reverse of this Warrant Certificate or properly executed by the institution in whose account the Warrant is recorded on the records of the Depository (the "**Participant**"), and substantially in the form included on the reverse of this Warrant Certificate and (iii) unless cashless exercise is permitted under the Warrant Agreement, the Exercise Price for each Warrant to be exercised in lawful money of the United States of America by certified or official bank check or by bank wire transfer in immediately available funds, in each case payable to the order of the Company.

As used herein, the term "**Business Day**" means any day other than Saturday, Sunday or other day on which commercial banks in the City of New York are authorized or required by law or executive order to remain closed.

Warrants may be exercised only in whole numbers of Warrants. No fractional Warrant Shares are to be issued upon the exercise of this Warrant, but rather the number of Warrant Shares to be issued shall be rounded up or down, as applicable, to the nearest whole number. If fewer than all of the Warrants evidenced by this Warrant Certificate are exercised, a new Warrant Certificate for the number of Warrants remaining unexercised shall be executed by the Company and countersigned by the Warrant Agent as provided in Section 2 of the Warrant Agreement, and delivered to the Holder of this Warrant Certificate at the address specified on the books of the Warrant Agent or as otherwise specified by such Holder.

The Company shall provide to the Holder prompt written notice of any time that the Company is unable to issue the Warrant Shares via DTC transfer or otherwise (without restrictive legend), because (A) the Commission has issued a stop order with respect to the Registration Statement, (B) the Commission otherwise has suspended or withdrawn the effectiveness of the Registration Statement, either temporarily or permanently, (C) the Company has suspended or withdrawn the effectiveness of the Registration Statement, either temporarily or permanently, or (D) otherwise (each a "**Restrictive Legend Event**"). To the extent that a Restrictive Legend Event occurs after the Holder has exercised a Warrant in accordance with the terms of the Warrants but prior to the delivery of the Warrant Shares, the Company shall, at the election of the Holder to be given within five (5) Business Days of receipt of notice of the Restrictive Legend Event, either (A) rescind the previously submitted Election to Purchase and the Company shall return all consideration paid by the Holder for such shares upon such rescission or (B) treat the attempted exercise as a cashless exercise as described in the next paragraph and refund the cash portion of the exercise price to the Holder.

If a Restrictive Legend Event has occurred and no exemption from the registration requirements is available, the Warrant shall only be exercisable on a cashless basis. Notwithstanding anything herein to the contrary, the Company shall not be required under any circumstances to make any cash payments or net cash settlement to the Holder in lieu of issuance of the Warrant Shares and, accordingly, any or all of the Warrants may expire worthless. Upon a "cashless exercise," the Holder shall be entitled to receive a certificate (or book entry) for the number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = the VWAP on the Business Day immediately preceding the date on which the Holder elects to exercise the Warrant by means of a "cashless exercise," as set forth in the applicable Election to Purchase;

(B) = the Exercise Price of the Warrant, as it may have been adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of the Warrant in accordance with the terms of the Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

Upon receipt of an Election to Purchase for a cashless exercise, the Warrant Agent will promptly deliver a copy of the Election to Purchase to the Company to confirm the number of Warrant Shares issuable in connection with the cashless exercise. The Company shall calculate and transmit to the Warrant Agent, and the Warrant Agent shall have no obligation under this section to calculate, the number of Warrant Shares issuable in connection with the cashless exercise.

"**VWAP**" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on NYSE AMEX, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (each, a "**Trading Market**"), the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a trading day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time) on any day that the Trading Market on which the Common Stock is then listed is open for trading), (b) the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the OTC Bulletin Board, (c) if the Common Stock is not then listed or quoted for trading on the OTC Bulletin Board and if prices for the Common Stock are then reported in the "Pink Sheets" published by OTC Markets, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by the Company's Board of Directors in good faith.

The Exercise Price and the number of Warrant Shares purchasable upon the exercise of each Warrant shall be subject to adjustment as provided pursuant to Section 4 of the Warrant Agreement.

Upon due presentment for registration of transfer or exchange of this Warrant Certificate at the stock transfer division of the Warrant Agent, the Company shall execute, and the Warrant Agent shall countersign and deliver, as provided in Section 5 of the Warrant Agreement, in the name of the designated transferee one or more new Warrant Certificates of any authorized denomination evidencing in the aggregate a like number of unexercised Warrants, subject to the limitations provided in the Warrant Agreement.

Neither this Warrant Certificate nor the Warrants evidenced hereby entitles the Holder to any of the rights of a stockholder of the Company, including, without limitation, the right to receive dividends, or other distributions, exercise any preemptive rights to vote or to consent or to receive notice as stockholders in respect of the meetings of stockholders or the election of directors of the Company or any other matter.

The Warrant Agreement and this Warrant Certificate may be amended as provided in the Warrant Agreement including, under certain circumstances described therein, without the consent of the Holder of this Warrant Certificate or the Warrants evidenced thereby.

THIS WARRANT CERTIFICATE AND ALL RIGHTS HEREUNDER AND UNDER THE WARRANT AGREEMENT SHALL BE GOVERNED BY AND INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK APPLICABLE TO CONTRACTS FORMED AND TO BE PERFORMED ENTIRELY WITHIN THE STATE OF NEW YORK, WITHOUT REGARD TO THE CONFLICTS OF LAW PROVISIONS THEREOF TO THE EXTENT SUCH PRINCIPLES OR RULES WOULD REQUIRE OR PERMIT THE APPLICATION OF THE LAWS OF ANOTHER JURISDICTION.

This Warrant Certificate shall not be entitled to any benefit under the Warrant Agreement or be valid or obligatory for any purpose, and no Warrant evidenced hereby may be exercised, unless this Warrant Certificate has been countersigned by the manual signature of the Warrant Agent.

IN WITNESS WHEREOF, the Company has caused this instrument to be duly executed.

Dated as of _____ __, 2018

TITAN PHARMACEUTICALS, INC.

By: _____
Name:
Title:

CONTINENTAL STOCK TRANSFER & TRUST COMPANY,
as Warrant Agent

By: _____
Name:
Title:

[REVERSE]

Instructions for Exercise of Warrant

To exercise the Warrants evidenced hereby, the Holder must, by 5:00 P.M., New York City time, on the specified Exercise Date, deliver to the Warrant Agent at its stock transfer division, a certified or official bank check or a bank wire transfer in immediately available funds, in each case payable to the Company, in an amount equal to the Exercise Price in full for the Warrants exercised. In addition, the Holder must provide the information required below and deliver this Warrant Certificate to the Warrant Agent at the address set forth below and the Book-Entry Warrants to the Warrant Agent in its account with the Depository designated for such purpose. The Warrant Certificate and this Election to Purchase must be received by the Warrant Agent by 5:00 P.M., New York City time, on the specified Exercise Date.

ELECTION TO PURCHASE
TO BE EXECUTED IF WARRANT HOLDER DESIRES
TO EXERCISE THE WARRANTS EVIDENCED HEREBY

The undersigned hereby irrevocably elects to exercise, on _____, ____ (the "**Exercise Date**"), _____ Warrants, evidenced by this Warrant Certificate, to purchase, _____ shares (the "**Warrant Shares**") of Common Stock, par value of $0.001 per share (the "**Common Stock**") of Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), and represents that on or before the Exercise Date:

[ ] such Holder has tendered payment for such Warrant Shares by certified or official bank check payable to the order of the Company c/o Continental Stock Transfer & Trust Company, 1 State Street, 30th Floor, New York, New York 10004, or by bank wire transfer in immediately available funds payable to the Company at Account No. [ ], in each case in the amount of $_____ in accordance with the terms hereof, or

[ ] if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 3.3.7 of the Warrant Agreement, to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 3.3.7.

The undersigned requests that said number of Warrant Shares be in fully registered form, registered in such names and delivered, all as specified in accordance with the instructions set forth below.

If said number of Warrant Shares is less than all of the Warrant Shares purchasable hereunder, the undersigned requests that a new Warrant Certificate evidencing the remaining balance of the Warrants evidenced hereby be issued and delivered to the Holder of the Warrant Certificate unless otherwise specified in the instructions below.

Dated: _____ __, ____

Name _____
(Please Print)

/ / / / - / / - / / / / _____
(Insert Social Security or Other Identifying Number of Holder)

Address _____
_____

Signature _____

This Warrant may only be exercised by presentation to the Warrant Agent at one of the following locations:

By hand at:	Continental Stock Transfer & Trust Company 1 State Street, 30th Floor New York, New York 10004
By mail at:	Continental Stock Transfer & Trust Company 1 State Street, 30th Floor New York, New York 10004

The method of delivery of this Warrant Certificate is at the option and risk of the exercising Holder and the delivery of this Warrant Certificate will be deemed to be made only when actually received by the Warrant Agent. If delivery is by mail, registered mail with return receipt requested, properly insured, is recommended. In all cases, sufficient time should be allowed to ensure timely delivery.

(Instructions as to form and delivery of Warrant Shares and/or Warrant Certificates)

Name in which Warrant Shares are to be registered if other than in the name of the Holder of this Warrant Certificate:

Address to which Warrant Shares are to be mailed if other than to the address of the Holder of this Warrant Certificate as shown on the books of the Warrant Agent:

(Street Address)

(City and State) (Zip Code)

Name in which Warrant Certificate evidencing unexercised Warrants, if any, is to be registered if other than in the name of the Holder of this Warrant Certificate:

Address to which certificate representing unexercised Warrants, if any, is to be mailed if other than to the address of the Holder of this Warrant Certificate as shown on the books of the Warrant Agent:

(Street Address)

(City and State) (Zip Code)

Dated:

Signature

Signature must conform in all respects to the name of the Holder as specified on the face of this Warrant Certificate. If Warrant Shares, or a Warrant Certificate evidencing unexercised Warrants, are to be issued in a name other than that of the Holder hereof or are to be delivered to an address other than the address of such Holder as shown on the books of the Warrant Agent, the above signature must be guaranteed by a an Eligible Guarantor Institution (as that term is defined in Rule 17Ad-15 of the Securities Exchange Act of 1934, as amended).

SIGNATURE GUARANTEE

Name of Firm _____

Address _____

Area Code and Number _____

Authorized Signature _____

Name _____

Title _____

Dated: _____, 20_____

ASSIGNMENT

(FORM OF ASSIGNMENT TO BE EXECUTED IF WARRANT HOLDER
DESIRES TO TRANSFER WARRANTS EVIDENCED HEREBY)

FOR VALUE RECEIVED, _____ HEREBY SELL(S), ASSIGN(S) AND TRANSFER(S) UNTO

(Please print name and address including zip code of assignee)	(Please insert social security or other identifying number of assignee)

the rights represented by the within Warrant Certificate and does hereby irrevocably constitute and appoint _____ Attorney to transfer said Warrant Certificate on the books of the Warrant Agent with full power of substitution in the premises.

Dated:

Signature

(Signature must conform in all respects to the name of the Holder as specified on the face of this Warrant Certificate and must bear a signature guarantee by an Eligible Guarantor Institution (as that term is defined in Rule 17Ad-15 of the Securities Exchange Act of 1934, as amended).

SIGNATURE GUARANTEE

Name of Firm _____
Address _____
Area Code and Number _____

Authorized Signature _____

Name _____
Title _____
Dated: _____, 20_____

Exhibit 4.7

THE REGISTERED HOLDER OF THIS PURCHASE WARRANT BY ITS ACCEPTANCE HEREOF, AGREES THAT IT WILL NOT SELL, TRANSFER OR ASSIGN THIS PURCHASE WARRANT EXCEPT AS HEREIN PROVIDED AND THE REGISTERED HOLDER OF THIS PURCHASE WARRANT AGREES THAT IT WILL NOT SELL, TRANSFER, ASSIGN, PLEDGE OR HYPOTHECATE THIS PURCHASE WARRANT FOR A PERIOD OF ONE HUNDRED EIGHTY DAYS FOLLOWING THE EFFECTIVE DATE (DEFINED BELOW) TO ANYONE OTHER THAN (I) A.G.P./ALLIANCE GLOBAL PARTNERS OR AN UNDERWRITER OR A SELECTED DEALER IN CONNECTION WITH THE OFFERING, OR (II) A BONA FIDE OFFICER OR PARTNER OF A.G.P./ALLIANCE GLOBAL PARTNERS OR OF ANY SUCH UNDERWRITER OR SELECTED DEALER.

THIS PURCHASE WARRANT IS NOT EXERCISABLE PRIOR TO [_____] [**DATE THAT IS ONE YEAR FROM THE EFFECTIVE DATE OF THE OFFERING**]. VOID AFTER 5:00 P.M., EASTERN TIME, [_____] [**DATE THAT IS 5 YEARS FROM THE EFFECTIVE DATE OF THE OFFERING**].

COMMON STOCK PURCHASE WARRANT

For the Purchase of [_____] Shares of Common Stock

of

TITAN PHARMACEUTICALS, INC.

1 . Purchase Warrant. THIS CERTIFIES THAT, for value received by Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), A.G.P./Alliance Global Partners ("**Holder**" or "**A.G.P.**"), as registered owner of this Purchase Warrant, is entitled, at any time or from time to time from [_____] [**DATE THAT IS ONE YEAR FROM THE EFFECTIVE DATE OF THE OFFERING**] (the "**Commencement Date**"), and at or before 5:00 p.m., Eastern time, [_____] [**DATE THAT IS 5 YEARS FROM THE EFFECTIVE DATE OF THE OFFERING**] (the "**Expiration Date**"), but not thereafter, to subscribe for, purchase and receive, in whole or in part, up to [_____] shares of common stock of the Company, par value $0.001 per share (the "**Shares**"), subject to adjustment as provided in Section 6 hereof. If the Expiration Date is a day on which banking institutions are authorized by law to close, then this Purchase Warrant may be exercised on the next succeeding day which is not such a day in accordance with the terms herein. During the period ending on the Expiration Date, the Company agrees not to take any action that would terminate this Purchase Warrant. This Purchase Warrant is initially exercisable at $[___] per Share [**110% of the price of the Shares sold in the Offering**]; provided, however, that upon the occurrence of any of the events specified in Section 6 hereof, the rights granted by this Purchase Warrant, including the exercise price per Share and the number of Shares to be received upon such exercise, shall be adjusted as therein specified. The term "**Exercise Price**" shall mean the initial exercise price or the adjusted exercise price, depending on the context.

2. Exercise.

2.1 Exercise Form. In order to exercise this Purchase Warrant, the exercise form attached hereto must be duly executed and completed and delivered to the Company, together with this Purchase Warrant and payment of the Exercise Price for the Shares being purchased payable in cash by wire transfer of immediately available funds to an account designated by the Company or by certified check or official bank check. If the subscription rights represented hereby shall not be exercised at or before 5:00 p.m., Eastern Time, on the Expiration Date, this Purchase Warrant shall become and be void without further force or effect, and all rights represented hereby shall cease and expire.

2.2 Cashless Exercise. If at any time after the Commencement Date there is no effective registration statement registering, or no current prospectus available for, the resale of the Shares by the Holder, then in lieu of exercising this Purchase Warrant by payment of cash or check payable to the order of the Company pursuant to Section 2.1 above, Holder may elect to receive the number of Shares equal to the value of this Purchase Warrant (or the portion thereof being exercised), by surrender of this Purchase Warrant to the Company, together with the exercise form attached hereto, in which event the issue to Holder, Shares in accordance with the following formula:

$$X = \frac{Y(A-B)}{A}$$

Where,

X = The number of Shares to be issued to Holder;
Y = The number of Shares for which the Purchase Warrant is being exercised;
A = The fair market value of one Share; and
B = The Exercise Price.

For purposes of this Section 2.2, the fair market value of a Share is defined as follows:

(i) if the Company's common stock is traded on a securities exchange, the value shall be deemed to be the closing price on such exchange prior to the exercise form being submitted in connection with the exercise of the Purchase Warrant; or

(ii) if the Company's common stock is actively traded over-the-counter, the value shall be deemed to be the closing bid prior to the exercise form being submitted in connection with the exercise of the Purchase Warrant; if there is no active public market, the value shall be the fair market value thereof, as determined in good faith by the Company's Board of Directors.

If Warrant Shares are issued in such a "cashless exercise," the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act of 1933, as amended (the "**Securities Act**"), the Warrant Shares shall take on the registered characteristics of the Warrants being exercised, and the holding period of the Warrants being exercised may be tacked on to the holding period of the Warrant Shares. The Company agrees not to take any position contrary to this Section 2.2.

2.3 Legend. Each certificate for the securities purchased under this Purchase Warrant shall bear a legend as follows unless such securities have been registered under the Securities Act:

"The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "**Securities Act**"), or applicable state law. Neither the securities nor any interest therein may be offered for sale, sold or otherwise transferred except pursuant to an effective registration statement under the Securities Act, or pursuant to an exemption from registration under the Securities Act and applicable state law which, in the opinion of counsel to the Company, is available."

3. Transfer.

3.1 General Restrictions. The registered Holder of this Purchase Warrant agrees by his, her or its acceptance hereof, that such Holder will not: (a) sell, transfer, assign, pledge or hypothecate this Purchase Warrant for a period of one hundred eighty (180) days following the Effective Date to anyone other than: (i) A.G.P. or an underwriter or a selected dealer participating in the Offering, or (ii) a bona fide officer or partner of A.G.P. or of any such underwriter or selected dealer, in each case in accordance with FINRA Conduct Rule 5110(g)(1), or (b) cause this Purchase Warrant or the securities issuable hereunder to be the subject of any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of this Purchase Warrant or the securities hereunder, except as provided for in FINRA Rule 5110(g)(2). On and after 180 days after the Effective Date, transfers to others may be made subject to compliance with or exemptions from applicable securities laws. In order to make any permitted assignment, the Holder must deliver to the Company the assignment form attached hereto duly executed and completed, together with the Purchase Warrant and payment of all transfer taxes, if any, payable in connection therewith. The Company shall within five (5) business days transfer this Purchase Warrant on the books of the Company and shall execute and deliver a new Purchase Warrant or Purchase Warrants of like tenor to the appropriate assignee(s) expressly evidencing the right to purchase the aggregate number of Shares purchasable hereunder or such portion of such number as shall be contemplated by any such assignment.

3.2 Restrictions Imposed by the Securities Act. The securities evidenced by this Purchase Warrant shall not be transferred unless and until: (i) the Company has received an opinion of counsel for the Holder reasonably acceptable to the Company that the securities may be transferred pursuant to an exemption from registration under the Securities Act and applicable state securities laws, the availability of which is established to the reasonable satisfaction of the Company (the Company hereby agreeing that the opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. shall be deemed satisfactory evidence of the availability of an exemption), or (ii) a registration statement or a post-effective amendment to the Registration Statement relating to the offer and sale of such securities has been filed by the Company and declared effective by the U.S. Securities and Exchange Commission (the "**Commission**") and compliance with applicable state securities law has been established.

4. Registration Rights.

4.1 Demand Registration.

4.1.1 Grant of Right. The Company, upon written demand (a "**Demand Notice**") of the Holder(s) of at least 51% of the Purchase Warrants and/or the underlying Shares ("**Majority Holders**"), agrees to register, on one occasion, all or any portion of the Shares underlying the Purchase Warrants (collectively, the "**Registrable Securities**"). On such occasion, the Company will file a registration statement with the Commission covering the Registrable Securities within thirty (30) days after receipt of a Demand Notice and use its commercially reasonable efforts to have the registration statement declared effective as promptly as practicable thereafter, subject to compliance with review by the Commission; provided, however, that if the Demand Notice is issued within 50 days prior to the beginning of the Company's fiscal year, the 30 day period shall be extended until 80 days after the last day of the prior fiscal year; and provided further that the Company shall not be required to comply with a Demand Notice if the Company has filed a registration statement with respect to which the Holder is entitled to piggyback registration rights pursuant to Section 4.2 hereof and the Holder has elected to participate in the offering covered by such registration statement. The demand for registration may be made at any time during a period of four (4) years beginning on the Commencement Date. The Company covenants and agrees to give written notice of its receipt of any Demand Notice by any Holder(s) to all other registered Holders of the Purchase Warrants and/or the Registrable Securities within ten (10) days after the date of the receipt of any such Demand Notice.

4.1.2 Terms. The Company shall bear all fees and expenses attendant to the registration of the Registrable Securities pursuant to Section 4.1.1, but the Holders shall pay any and all underwriting commissions and the reasonable expenses of one legal counsel selected by the Holders to represent them in connection with the sale of the Registrable Securities. The Company agrees to use its commercially reasonable efforts to cause the filing required herein to become effective as promptly as practicable and to qualify or register the Registrable Securities in such States as are reasonably requested by the Holder(s); provided, however, that in no event shall the Company be required to register the Registrable Securities in a State in which such registration would cause: (i) the Company to be obligated to register or license to do business in such State or submit to general service of process in such State, or (ii) the principal shareholders of the Company to be obligated to escrow their shares of capital stock of the Company. The Company shall use its commercially reasonable efforts to cause any registration statement filed pursuant to the demand right granted under Section 4.1.1 to remain effective for a period of at least twelve (12) consecutive months after the date that the Holders of the Registrable Securities covered by such registration statement are first given the opportunity to sell all of such securities. The Holders shall only use the prospectuses provided by the Company to sell the shares covered by such registration statement, and will immediately cease to use any prospectus furnished by the Company if the Company advises the Holder that such prospectus may no longer be used due to a material misstatement or omission or if the Company determines in good faith that such suspension of use is necessary to delay the disclosure of material non-public information concerning the Company, the disclosure of which at the time is not, in the good faith opinion of the Company, in the best interests of the Company. Notwithstanding the provisions of this Section 4.1.2, the Holder shall be entitled to a demand registration under this Section 4.1.2 on only one (1) occasion and such demand registration right shall terminate on the fifth anniversary of the effectiveness of the registration statement in accordance with FINRA Rule 5110(f)(2)(G)(iv).

4.2 "Piggy-Back" Registration.

4.2.1 Grant of Right. In addition to the demand right of registration described in Section 4.1 hereof, the Holder shall have the right, for a period of no more than seven (7) years from the date of effectiveness of the registration statement in accordance with FINRA Rule 5110(f)(2)(G)(v), to include the Registrable Securities as part of any other registration of securities filed by the Company (other than in connection with a transaction contemplated by Rule 145(a) promulgated under the Securities Act or pursuant to Form S-8 or any equivalent form); provided, however, that if, solely in connection with any primary underwritten public offering for the account of the Company, the managing underwriter(s) thereof shall, in its reasonable discretion, impose a limitation on the number of shares of Common Stock which may be included in the Registration Statement because, in such underwriter(s)' judgment, marketing or other factors dictate such limitation is necessary to facilitate public distribution, then the Company shall be obligated to include in such Registration Statement only such limited portion of the Registrable Securities with respect to which the Holder requested inclusion hereunder as the underwriter shall reasonably permit. Any exclusion of Registrable Securities shall be made pro rata among the Holders seeking to include Registrable Securities in proportion to the number of Registrable Securities sought to be included by such Holders; provided, however, that the Company shall not exclude any Registrable Securities unless the Company has first excluded all outstanding securities, the holders of which are not entitled to inclusion of such securities in such Registration Statement or are not entitled to pro rata inclusion with the Registrable Securities.

4 . 2 . 2 Terms. The Company shall bear all fees and expenses attendant to registering the Registrable Securities pursuant to Section 4.2.1 hereof, but the Holders shall pay any and all underwriting commissions and the reasonable expenses of one legal counsel selected by the Holders to represent them in connection with the sale of the Registrable Securities. In the event of such a proposed registration, the Company shall furnish the then Holders of outstanding Registrable Securities with not less than thirty (30) days written notice prior to the proposed date of filing of such registration statement. Such notice to the Holders shall continue to be given for each registration statement filed by the Company until such time as all of the Registrable Securities have been sold by the Holder. The holders of the Registrable Securities shall exercise the "piggy-back" rights provided for herein by giving written notice within ten (10) days of the receipt of the Company's notice of its intention to file a registration statement. Except as otherwise provided in this Purchase Warrant, there shall be no limit on the number of times the Holder may request registration under this Section 4.2.2; provided, however, that such registration rights shall terminate on the sixth anniversary of the Commencement Date.

4.3 General Terms.

4.3.1 Indemnification. The Company shall indemnify the Holder(s) of the Registrable Securities to be sold pursuant to any registration statement hereunder and each person, if any, who controls such Holders within the meaning of Section 15 of the Securities Act or Section 20 (a) of the Securities Exchange Act of 1934, as amended ("**Exchange Act**"), against all loss, claim, damage, expense or liability (including all reasonable attorneys' fees and other expenses reasonably incurred in investigating, preparing or defending against any claim whatsoever) to which any of them may become subject under the Securities Act, the Exchange Act or otherwise, arising from such registration statement but only to the same extent and with the same effect as the provisions pursuant to which the Company has agreed to indemnify the Underwriters contained in Section 5.1 of the Underwriting Agreement between A.G.P., as representative of the Underwriters listed therein, and the Company, dated as of September [____], 2018. The Holder(s) of the Registrable Securities to be sold pursuant to such registration statement, and their successors and assigns, shall severally, and not jointly, indemnify the Company, against all loss, claim, damage, expense or liability (including all reasonable attorneys' fees and other expenses reasonably incurred in investigating, preparing or defending against any claim whatsoever) to which they may become subject under the Securities Act, the Exchange Act or otherwise, arising from information furnished by or on behalf of such Holders, or their successors or assigns, in writing, for specific inclusion in such registration statement to the same extent and with the same effect as the provisions contained in Section 5.2 of the Underwriting Agreement pursuant to which the Underwriters have agreed to indemnify the Company.

4.3.2 Exercise of Purchase Warrants. Nothing contained in this Purchase Warrant shall be construed as requiring the Holder(s) to exercise their Purchase Warrants prior to or after the initial filing of any registration statement or the effectiveness thereof.

4.3.3 Documents Delivered to Holders. The Company shall furnish upon written request to each Holder participating in any of the foregoing offerings and to each underwriter of any such offering, if any, a signed counterpart, addressed to such Holder or underwriter, of: (i) an opinion of counsel to the Company, dated the effective date of such registration statement (and, if such registration includes an underwritten public offering, an opinion dated the date of the closing under any underwriting agreement related thereto), and (ii) a "cold comfort" letter dated the effective date of such registration statement (and, if such registration includes an underwritten public offering, a letter dated the date of the closing under the underwriting agreement) signed by the independent registered public accounting firm which has issued a report on the Company's financial statements included in such registration statement, in each case covering substantially the same matters with respect to such registration statement (and the prospectus included therein) and, in the case of such accountants' letter, with respect to events subsequent to the date of such financial statements, as are customarily covered in opinions of issuer's counsel and in accountants' letters delivered to underwriters in underwritten public offerings of securities. The Company shall also deliver promptly to each Holder participating in the offering requesting the correspondence and memoranda described below and to the managing underwriter, if any, copies of all correspondence between the Commission and the Company, its counsel or auditors and all memoranda relating to discussions with the Commission or its staff with respect to the registration statement and permit each Holder and underwriter to do such investigation, upon reasonable advance notice and during normal business hours, with respect to information contained in or omitted from the registration statement as it deems reasonably necessary to comply with applicable securities laws or rules of FINRA. Such investigation shall include access to books, records and properties and opportunities to discuss the business of the Company with its officers and independent auditors, all to such reasonable extent and at such reasonable times as such Holder shall reasonably request.

4 . 3 . 4 Underwriting Agreement. The Company shall enter into an underwriting agreement with the managing underwriter(s), if any, selected by any Holders whose Registrable Securities are being registered pursuant to this Section 4, which managing underwriter shall be reasonably satisfactory to the Company. Such agreement shall be reasonably satisfactory in form and substance to the Company, each Holder and such managing underwriters, and shall contain such representations, warranties and covenants by the Company and such other terms as are customarily contained in agreements of that type used by the managing underwriter. The Holders shall be parties to any underwriting agreement relating to an underwritten sale of their Registrable Securities and may, at their option, require that any or all the representations, warranties and covenants of the Company to or for the benefit of such underwriters shall also be made to and for the benefit of such Holders. Such Holders shall not be required to make any representations or warranties to or agreements with the Company or the underwriters except as they may relate to such Holders, their Shares and their intended methods of distribution.

4.3.5 Documents to be Delivered by Holder(s). Each of the Holder(s) participating in any of the foregoing offerings shall furnish to the Company a completed and executed questionnaire provided by the Company requesting information customarily sought of selling security holders.

4 . 3 . 6 Damages. Should the registration or the effectiveness thereof required by Sections 4.1 and 4.2 hereof be delayed by the Company or the Company otherwise fails to comply in any material respect with such provisions, the Holder(s) shall, in addition to any other legal or other relief available to the Holder(s), be entitled to obtain specific performance or other equitable (including injunctive) relief against the threatened breach of such provisions or the continuation of any such breach.

5. New Purchase Warrants to be Issued.

5 . 1 Partial Exercise or Transfer. Subject to the restrictions in Section 3 hereof, this Purchase Warrant may be exercised or assigned in whole or in part. In the event of the exercise or assignment hereof in part only, upon surrender of this Purchase Warrant for cancellation, together with the duly executed exercise or assignment form and funds sufficient to pay any Exercise Price and/or transfer tax if exercised pursuant to Section 2.1 hereto, the Company shall cause to be delivered to the Holder without charge a new Purchase Warrant of like tenor to this Purchase Warrant in the name of the Holder evidencing the right of the Holder to purchase the number of Shares purchasable hereunder as to which this Purchase Warrant has not been exercised or assigned.

5.2 Lost Certificate. Upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Purchase Warrant and of reasonably satisfactory indemnification or the posting of a bond, the Company shall execute and deliver a new Purchase Warrant of like tenor and date. Any such new Purchase Warrant executed and delivered as a result of such loss, theft, mutilation or destruction shall constitute a substitute contractual obligation on the part of the Company.

6. Adjustments.

6.1 Adjustments to Exercise Price and Number of Securities. The Exercise Price and the number of Shares underlying the Purchase Warrant shall be subject to adjustment from time to time as hereinafter set forth:

6.1.1 Share Dividends; Split Ups. If, after the date hereof, and subject to the provisions of Section 6.3 below, the number of outstanding Shares is increased by a stock dividend payable in Shares or by a split up of Shares or other similar event, then, on the effective day thereof, the number of Shares purchasable hereunder shall be increased in proportion to such increase in outstanding Shares, and the Exercise Price shall be proportionately decreased.

6.1.2 Aggregation of Shares. If, after the date hereof, and subject to the provisions of Section 6.3 below, the number of outstanding Shares is decreased by a consolidation, combination or reclassification of Shares or other similar event, then, on the effective date thereof, the number of Shares purchasable hereunder shall be decreased in proportion to such decrease in outstanding Shares, and the Exercise Price shall be proportionately increased.

6.1.3 Replacement of Securities upon Reorganization, etc. In case of any reclassification or reorganization of the outstanding Shares other than a change covered by Section 6.1.1 or 6.1.2 hereof or that solely affects the par value of such Shares, or in the case of any share reconstruction or amalgamation or consolidation of the Company with or into another corporation (other than a consolidation or share reconstruction or amalgamation in which the Company is the continuing corporation and that does not result in any reclassification or reorganization of the outstanding Shares), or in the case of any sale or conveyance to another corporation or entity of the property of the Company as an entirety or substantially as an entirety in connection with which the Company is dissolved, the Holder of this Purchase Warrant shall have the right thereafter (until the expiration of the right of exercise of this Purchase Warrant) to receive upon the exercise hereof, for the same aggregate Exercise Price payable hereunder immediately prior to such event, the kind and amount of shares of stock or other securities or property (including cash) receivable upon such reclassification, reorganization, share reconstruction or amalgamation, or consolidation, or upon a dissolution following any such sale or transfer, by a Holder of the number of Shares of the Company obtainable upon exercise of this Purchase Warrant immediately prior to such event; and if any reclassification also results in a change in Shares covered by Section 6.1.1 or 6.1.2, then such adjustment shall be made pursuant to Sections 6.1.1, 6.1.2 and this Section 6.1.3. The provisions of this Section 6.1.3 shall similarly apply to successive reclassifications, reorganizations, share reconstructions or amalgamations, or consolidations, sales or other transfers.

6.1.4 Changes in Form of Purchase Warrant. This form of Purchase Warrant need not be changed because of any change pursuant to this Section 6.1, and Purchase Warrants issued after such change may state the same Exercise Price and the same number of Shares as are stated in the Purchase Warrants initially issued pursuant to this Purchase Warrant. The acceptance by any Holder of the issuance of new Purchase Warrants reflecting a required or permissive change shall not be deemed to waive any rights to an adjustment occurring after the Commencement Date or the computation thereof.

6.2 Substitute Purchase Warrant. In case of any consolidation of the Company with, or share reconstruction or amalgamation of the Company with or into, another corporation (other than a consolidation or share reconstruction or amalgamation which does not result in any reclassification or change of the outstanding Shares), the corporation formed by such consolidation or share reconstruction or amalgamation shall execute and deliver to the Holder a supplemental Purchase Warrant providing that the holder of each Purchase Warrant then outstanding or to be outstanding shall have the right thereafter (until the stated expiration of such Purchase Warrant) to receive, upon exercise of such Purchase Warrant, the kind and amount of shares of stock and other securities and property receivable upon such consolidation or share reconstruction or amalgamation, by a holder of the number of Shares of the Company for which such Purchase Warrant might have been exercised immediately prior to such consolidation, share reconstruction or amalgamation, sale or transfer. Such supplemental Purchase Warrant shall provide for adjustments which shall be identical to the adjustments provided for in this Section 6. The above provision of this Section shall similarly apply to successive consolidations or share reconstructions or amalgamations.

6.3 Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of Shares upon the exercise of the Purchase Warrant, nor shall it be required to issue scrip or pay cash in lieu of any fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up or down, as the case may be, to the nearest whole number of Shares or other securities, properties or rights.

7. Reservation and Listing. The Company shall at all times reserve and keep available out of its authorized Shares, solely for the purpose of issuance upon exercise of the Purchase Warrants, such number of Shares or other securities, properties or rights as shall be issuable upon the exercise thereof. The Company covenants and agrees that, upon exercise of the Purchase Warrants and payment of the Exercise Price therefor, in accordance with the terms hereby, all Shares and other securities issuable upon such exercise shall be duly and validly issued, fully paid and non-assessable and not subject to preemptive rights of any shareholder. As long as the Purchase Warrants shall be outstanding, the Company shall use its commercially reasonable efforts to cause all Shares issuable upon exercise of the Purchase Warrants to be listed (subject to official notice of issuance) on all national securities exchanges (or, if applicable, on the OTCQB, OTCQX, OTC PINK or any successor trading market) on which the Shares issued to the public in the Offering may then be listed and/or quoted.

8. Certain Notice Requirements.

8.1 Holder's Right to Receive Notice. Nothing herein shall be construed as conferring upon the Holders the right to vote or consent or to receive notice as a shareholder for the election of directors or any other matter, or as having any rights whatsoever as a shareholder of the Company. If, however, at any time prior to the expiration of the Purchase Warrants and their exercise, any of the events described in Section 8.2 shall occur, then, in one or more of said events, the Company shall give written notice of such event at least fifteen days prior to the date fixed as a record date or the date of closing the transfer books for the determination of the shareholders entitled to such dividend, distribution, conversion or exchange of securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of the closing of the transfer books, as the case may be. Notwithstanding the foregoing, the Company shall deliver to each Holder a copy of each notice given to the other shareholders of the Company at the same time and in the same manner that such notice is given to the shareholders.

8.2 Events Requiring Notice. The Company shall be required to give the notice described in this Section 8 upon one or more of the following events: (i) if the Company shall take a record of the holders of its Shares for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company, (ii) the Company shall offer to all the holders of its Shares any additional shares of capital stock of the Company or securities convertible into or exchangeable for shares of capital stock of the Company, or any option, right or warrant to subscribe therefor, or (iii) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or share reconstruction or amalgamation) or a sale of all or substantially all of its property, assets and business shall be proposed.

8.3 Notice of Change in Exercise Price. The Company shall, promptly after an event requiring a change in the Exercise Price pursuant to Section 6 hereof, send notice to the Holders of such event and change ("**Price Notice**"). The Price Notice shall describe the event causing the change and the method of calculating same and shall be certified as being true and accurate by the Company's Chief Financial Officer.

8.4 Transmittal of Notices. All notices, requests, consents and other communications under this Purchase Warrant shall be in writing and shall be deemed to have been duly made when hand delivered, or mailed by express mail or private courier service: (i) if to the registered Holder of the Purchase Warrant, to the address of such Holder as shown on the books of the Company, or (ii) if to the Company, to following address or to such other address as the Company may designate by notice to the Holders:

If to the Holder:

A.G.P./Alliance Global Partners
590 Madison Avenue, 36th Floor
New York, New York 10022
Attn: Mr. Thomas Higgins, Managing Director, Investment Banking
Email: thiggins@Allianceg.com

with a copy (which shall not constitute notice) to:

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
666 Third Avenue
New York, NY 10017
Attn: Anthony J. Marsico, Esq.
Email: AJMarsico@mintz.com

If to the Company:

Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080
Attention: Sunil Bhonsle, Chief Executive Officer
Email: SBhonsle@titanpharm.com

with a copy (which shall not constitute notice) to:

Loeb & Loeb LLP
345 Park Avenue
New York, New York 10154
Attention: Fran Stoller, Esq.
Email: fstoller@loeb.com

9. Miscellaneous.

9.1 Amendments. The Company and A.G.P. may from time to time supplement or amend this Purchase Warrant without the approval of any of the Holders in order to cure any ambiguity, to correct or supplement any provision contained herein that may be defective or inconsistent with any other provisions herein, or to make any other provisions in regard to matters or questions arising hereunder that the Company and A.G.P. may deem necessary or desirable and that the Company and A.G.P. deem shall not adversely affect the interest of the Holders. All other modifications or amendments shall require the written consent of and be signed by the party against whom enforcement of the modification or amendment is sought.

9.2 Headings. The headings contained herein are for the sole purpose of convenience of reference, and shall not in any way limit or affect the meaning or interpretation of any of the terms or provisions of this Purchase Warrant.

9.3. Entire Agreement. This Purchase Warrant (together with the other agreements and documents being delivered pursuant to or in connection with this Purchase Warrant) constitutes the entire agreement of the parties hereto with respect to the subject matter hereof, and supersedes all prior agreements and understandings of the parties, oral and written, with respect to the subject matter hereof.

9.4 Binding Effect. This Purchase Warrant shall inure solely to the benefit of and shall be binding upon, the Holder and the Company and their permitted assignees, respective successors, legal representative and assigns, and no other person shall have or be construed to have any legal or equitable right, remedy or claim under or in respect of or by virtue of this Purchase Warrant or any provisions herein contained.

9.5 Governing Law; Submission to Jurisdiction; Trial by Jury. This Purchase Warrant shall be governed by and construed and enforced in accordance with the laws of the State of New York, without giving effect to conflict of laws principles thereof. The Company hereby agrees that any action, proceeding or claim against it arising out of, or relating in any way to this Purchase Warrant shall be brought and enforced in the New York Supreme Court, County of New York, or in the United States District Court for the Southern District of New York, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum. Any process or summons to be served upon the Company may be served by transmitting a copy thereof by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 8 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the Company in any action, proceeding or claim. The Company and the Holder agree that the prevailing party(ies) in any such action shall be entitled to recover from the other party(ies) all of its reasonable attorneys' fees and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor. The Company (on its behalf and, to the extent permitted by applicable law, on behalf of its stockholders and affiliates) and the Holder hereby irrevocably waive, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Purchase Warrant or the transactions contemplated hereby.

9.6 Waiver, etc. The failure of the Company or the Holder to at any time enforce any of the provisions of this Purchase Warrant shall not be deemed or construed to be a waiver of any such provision, nor to in any way affect the validity of this Purchase Warrant or any provision hereof or the right of the Company or any Holder to thereafter enforce each and every provision of this Purchase Warrant. No waiver of any breach, non-compliance or non-fulfillment of any of the provisions of this Purchase Warrant shall be effective unless set forth in a written instrument executed by the party or parties against whom or which enforcement of such waiver is sought; and no waiver of any such breach, non-compliance or non-fulfillment shall be construed or deemed to be a waiver of any other or subsequent breach, non-compliance or non-fulfillment.

9.7 Exchange Agreement. As a condition of the Holder's receipt and acceptance of this Purchase Warrant, Holder agrees that, at any time prior to the complete exercise of this Purchase Warrant by Holder, if the Company and A.G.P. enter into an agreement ("**Exchange Agreement**") pursuant to which they agree that all outstanding Purchase Warrants will be exchanged for securities or cash or a combination of both, then Holder shall agree to such exchange and become a party to the Exchange Agreement.

[*Signature Page Follows*]

IN WITNESS WHEREOF, the Company has caused this Purchase Warrant to be signed by its duly authorized officer as of the ____ day of _____, 2018.

TITAN PHARMACEUTICALS, INC.

By: _____
Name:
Title:

[*Form to be used to exercise Purchase Warrant*]

Date: _____, 20___

The undersigned hereby elects irrevocably to exercise the Purchase Warrant for _____ shares of common stock, par value $0.001 per share (the "**Shares**"), of Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), and hereby makes payment of $____ (at the rate of $____ per Share) in payment of the Exercise Price pursuant thereto. Please issue the Shares as to which this Purchase Warrant is exercised in accordance with the instructions given below and, if applicable, a new Purchase Warrant representing the number of Shares for which this Purchase Warrant has not been exercised.

or

The undersigned hereby elects irrevocably to convert its right to purchase ___ Shares of the Company under the Purchase Warrant for _____ Shares, as determined in accordance with the following formula:

$$X = \frac{Y(A-B)}{A}$$

Where,

X = The number of Shares to be issued to Holder;
Y = The number of Shares for which the Purchase Warrant is being exercised;
A = The fair market value of one Share which is equal to $_____; and
B = The Exercise Price which is equal to $_____ per share

The undersigned agrees and acknowledges that the calculation set forth above is subject to confirmation by the Company and any disagreement with respect to the calculation shall be resolved by the Company in its sole discretion.

Please issue the Shares as to which this Purchase Warrant is exercised in accordance with the instructions given below and, if applicable, a new Purchase Warrant representing the number of Shares for which this Purchase Warrant has not been converted.

Signature _____

Signature Guaranteed _____

INSTRUCTIONS FOR REGISTRATION OF SECURITIES

Name: _____
(Print in Block Letters)

Address: _____
_____
_____

NOTICE: The signature to this form must correspond with the name as written upon the face of the Purchase Warrant without alteration or enlargement or any change whatsoever, and must be guaranteed by a bank, other than a savings bank, or by a trust company or by a firm having membership on a registered national securities exchange.

[*Form to be used to assign Purchase Warrant*]

ASSIGNMENT

(To be executed by the registered Holder to effect a transfer of the within Purchase Warrant):

FOR VALUE RECEIVED, _____ does hereby sell, assign and transfer unto the right to purchase shares of common stock, par value $0.001 per share, of Titan Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), evidenced by the Purchase Warrant and does hereby authorize the Company to transfer such right on the books of the Company.

Dated: _____, 20__

Signature _____

Signature Guaranteed _____

NOTICE: The signature to this form must correspond with the name as written upon the face of the within Purchase Warrant without alteration or enlargement or any change whatsoever, and must be guaranteed by a bank, other than a savings bank, or by a trust company or by a firm having membership on a registered national securities exchange.

Exhibit 5.1

Loeb & Loeb LLP
345 Park Avenue
New York, NY 10154
(212) 407-4000

September 11, 2018

Re: Titan Pharmaceuticals, Inc.
Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to Titan Pharmaceuticals, Inc., a Delaware corporation (the "Company"), in connection with the Registration Statement on Form S-1 (File No. 333-226841), as amended through the date hereof (the "Registration Statement"), filed by the Company with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement relates to the public offering of up to (i) 3,358,209 Class A Units (the "Class A Units"), with each Class A Unit consisting of one share of the Company's common stock, par value $0.001 per share (the "Common Stock"), and one warrant to purchase 0.5 of a share of Common Stock ("Warrant"); (ii) 12,750 Class B Units (the "Class B Units"), with each Class B Unit consisting of one share of Series A Convertible Preferred Stock, par value $0.001 per share (the "Series A Convertible Preferred Stock"), together with the equivalent number of Warrants as would have been issued to such purchaser if they had purchased Class A Units based on the public offering price for the Class A Units; (iii) 19,029,851 shares of Common Stock issuable upon conversion of the Series A Convertible Preferred Stock (the "Conversion Shares") as set forth in the Certificate of Designation for the Series A Convertible Preferred Stock, the form of which is filed as an exhibit to the Registration Statement; (iv) 11,194,030 shares of Common Stock issuable upon exercise of the Warrants (the "Warrant Shares"), (v) the warrant to be issued to the representative of the underwriters (the "Representative's Warrant") and (vi) the shares of Common Stock issuable upon exercise of the Representative's Warrant (the "Representative's Warrant Shares").

In rendering the opinion set forth herein, we have examined originals or copies, certified or otherwise identified to our satisfaction as being true and complete copies of the originals, of specimen common stock certificates, the Certificate of Incorporation of the Company, as amended to date, the By-laws of the Company, as amended to date, the Registration Statement and all exhibits thereto, and such other documents, corporate records, certificates of officers of the Company and of public officials and other instruments as we have deemed necessary or advisable. In our examination, we have assumed without independent investigation the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies.

Based on the foregoing, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that: (i) the shares of Common Stock included in the Class A Units, when issued against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable; (ii) the shares of Series A Convertible Preferred Stock included in the Class B Units, when issued against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable; (iii) the Conversion Shares, when issued upon exercise of the Series A Convertible Preferred Stock, will be validly issued, fully paid and non-assessable; (iv) the Warrant Shares, when issued upon exercise of the Warrants and the Representative's Warrant Shares, when issued upon exercise of the Representative's Warrant against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable; (v) the Series A Convertible Preferred Stock, the Warrants and the Representative's Warrant, when issued as set forth in the Registration Statement, will be legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms; (vi) the Class A Units, when issued against payment thereof as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable , and will be legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms and (vii) the Class B Units, when issued against payment thereof as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable, and will be legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.

The opinions expressed above are subject to the following additional exceptions, qualifications, limitations and assumptions:

A. We render no opinion herein as to matters involving the laws of any jurisdiction other than the State of New York and the United States of America and the Delaware General Corporation Law. We assume no obligation to revise or supplement this opinion in the event of future changes in such laws or the interpretations thereof or such facts.

B. The opinions expressed herein are subject to (a) the effect of any bankruptcy, insolvency, reorganization, moratorium, arrangement or similar laws affecting the rights and remedies of creditors' generally, including without limitation the effect of statutory or other laws regarding fraudulent transfers or preferential transfers, and (b) general principles of equity, including without limitation concepts of materiality, reasonableness, good faith and fair dealing and the possible unavailability of specific performance, injunctive relief or other equitable remedies regardless of whether enforceability is considered in a proceeding in equity or at law.

This opinion letter is furnished in connection with the filing of the Registration Statement and may not be relied upon for any other purpose without our prior written consent in each instance. Further, no portion of this letter may be quoted, circulated or referenced to in any other document for any other purpose without our prior written consent.

We consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and further consent to all references to us under the caption "Legal Matters" in the Registration Statement and any prospectus that forms a part thereof. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Loeb & Loeb LLP

Loeb & Loeb LLP

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference, in the Prospectus constituting a part of this Amendment No. 2 to Registration Statement on Form S-1 (No. 333-226841), of our report dated March 30, 2018, relating to the financial statements of Titan Pharmaceuticals, Inc., appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2017. Our report contains an explanatory paragraph expressing substantial doubt about the Company's ability to continue as a going concern.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ OUM & CO. LLP

San Francisco, California
September 11, 2018