PROSPECTUS SUPPLEMENT (to the Prospectus Dated April 4, 2016)



\$11,550,332

Common Stock

We have entered into a Capital on DemandTM Sales Agreement, or Sales Agreement, with JonesTrading Institutional Services LLC, or JonesTrading, relating to the shares of our common stock offered by this prospectus supplement and the accompanying prospectus. In accordance with the terms of the Sales Agreement, we may offer and sell through JonesTrading, as our sales agent, shares of our common stock from time to time having aggregate sales proceeds of up to \$11,550,332.

Our common stock is traded on the Nasdaq Global Market under the symbol "TCON." On September 6, 2018, the last reported sales price of our common stock was \$2.10 per share and the aggregate market value of our outstanding common stock held by non-affiliates was approximately \$45.2 million, based on 21,522,228 shares of our outstanding common stock held by non-affiliates. During the 12 calendar-month period that ends on, and includes, the date of this prospectus supplement, we have sold an aggregate of \$3,515,227 of our common stock pursuant to General Instruction I.B.6 of Form S-3. As a result, we are eligible to offer and sell up to an aggregate of \$11,550,332 of shares of our common stock pursuant to such instruction.

Sales of our common stock, if any, under this prospectus supplement may be made in sales deemed to be "at the market offerings" as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act. JonesTrading will act as sales agent using commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between JonesTrading and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to JonesTrading for sales of common stock sold pursuant to the Sales Agreement will be an amount equal to 2.5% of the gross proceeds of any shares of common stock sold under the Sales Agreement. In connection with the sale of the common stock on our behalf, JonesTrading will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of JonesTrading will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to JonesTrading with respect to certain liabilities, including liabilities under the Securities Act or the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Investing in our common stock involves a high degree of risk. Please read "Risk Factors" on page S-4 of this prospectus supplement and in the documents we incorporate by reference into this prospectus supplement and any free writing prospectus that we have authorized for use in connection with this offering to read about factors you should consider before investing in our securities.

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



The date of this prospectus supplement is September 6, 2018.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of common stock and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus, including the documents incorporated by reference therein, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus supplement or the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

We have not, and JonesTrading has not, authorized anyone to provide you with information different than or inconsistent with the information contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and in any free writing prospectus that we have authorized for use in connection with this offering. We and JonesTrading take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not, and JonesTrading is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents, regardless of the time of delivery of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference into this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of our common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of our common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

Unless the context indicates otherwise, as used in this prospectus supplement and the accompanying prospectus, the terms "TRACON," "the Company," "we," "us" and "our" refer to TRACON Pharmaceuticals, Inc., a Delaware corporation, and its wholly-owned subsidiaries on a consolidated basis. This prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein contain references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein, 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 their respective owners will not assert, to the fullest extent permitted under applicable law, their rights thereto. 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 companies.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus supplement. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, you should read and consider carefully the more detailed information included or incorporated by reference in this prospectus supplement and the accompanying prospectus, including the factors described under the heading "Risk Factors" in this prospectus supplement and under similar headings in the documents that are incorporated by reference into this prospectus supplement, as well as the information included in any free writing prospectus that we have authorized for use in connection with this offering.

Overview

We are a biopharmaceutical company focused on the development and commercialization of novel targeted therapeutics for cancer and wet age-related macular degeneration, or wet AMD. We are a leader in the field of endoglin biology and are using our expertise to develop antibodies that bind to the endoglin receptor. Endoglin is essential to angiogenesis, the process of new blood vessel formation required for solid cancer growth and wet AMD. We are developing our lead product candidate, TRC105 (carotuximab), an endoglin antibody, for the treatment of multiple solid tumor types in combination with inhibitors of the vascular endothelial growth factor, or VEGF, pathway. The VEGF pathway regulates vascular development in the embryo, or vasculogenesis, and angiogenesis. We believe treatment with TRC105 in combination with VEGF inhibitors may improve survival in cancer patients when compared to treatment with a VEGF inhibitor alone. TRC105 has been studied in 11 completed Phase 2 clinical trials and three completed Phase 1 clinical trials, and is currently being dosed in one Phase 3 clinical trial, four Phase 2 clinical trials and three Phase 1 clinical trials. Our TRC105 oncology clinical development plan is broad and involves a tiered approach. We are initially focused on angiosarcoma which is a tumor that highly expresses endoglin, the target of TRC105, and therefore may be more responsive to treatment with TRC105. We have seen complete durable responses in this tumor type and are currently enrolling the international multicenter Phase 3 TAPPAS trial in angiosarcoma. We obtained Special Protocol Assessment agreement from the U.S. Food and Drug Administration, or FDA, on our clinical trial design for the Phase 3 trial in angiosarcoma and also incorporated scientific advice from the European Medicines Agency, or EMA, regarding the adequacy of the trial design. We also received orphan drug designation from the FDA and the EMA for TRC105 for the treatment of soft tissue sarcoma, including angiosarcoma, in 2016.

We utilize a product development platform that emphasizes capital efficiency. Our experienced clinical operations, data management, quality assurance, product development and regulatory affairs groups manage significant aspects of our clinical trials with internal resources. We use these internal resources to minimize the costs associated with utilizing contract research organizations, or CROs. In our experience, this model has resulted in capital efficiencies and improved communication with clinical trial sites, which expedites patient enrollment and allows direct access to patient data as compared to a CRO-managed model, and we have leveraged this capital efficient model in all of our ongoing clinical trials including our international Phase 3 TAPPAS trial in angiosarcoma. We have also leveraged our product development platform to diversify our product pipeline through a license agreement with Janssen Pharmaceutica N.V., or Janssen, and continue to evaluate potential value creating business opportunities with other companies utilizing our product development platform. For example, we are currently identifying ex-U.S. companies who are in need of a rapid and capital-efficient U.S. drug development solution. We believe we can become a preferred clinical developmental and U.S. commercialization partner through a cost- and risk-sharing partnership structure which may include U.S. commercialization.

In March 2014, Santen Pharmaceutical Co. Ltd., or Santen, licensed from us exclusive worldwide rights to develop and commercialize our endoglin antibodies for ophthalmology indications, and in July 2017 Santen initiated dosing in a randomized Phase 2 clinical trial of DE-122 in wet AMD. In December 2017, Ambrx, Inc., or Ambrx, licensed from us exclusive rights to develop and commercialize our endoglin antibodies in China (including Hong Kong and Macau) and Taiwan.

Our other product candidates are TRC102, which is a small molecule that is in Phase 2 clinical development for the treatment of mesothelioma and glioblastoma, and two compounds that we licensed from Janssen in September 2016: TRC253, which is a small molecule in a Phase 1/2 clinical trial for the treatment of metastatic castration-resistant prostate cancer, and TRC694, a small molecule in pre-clinical development for the treatment of hematologic malignancies, including myeloma.

Corporate Information

We were incorporated in the state of Delaware in October 2004 as Lexington Pharmaceuticals, Inc., and we subsequently changed our name to TRACON Pharmaceuticals, Inc. in March 2005, at which time we relocated to San Diego, California. Our principal executive offices are located at 4350 La Jolla Village Drive, Suite 800, San Diego, California 92122, and our telephone number is (858) 550-0780. Our corporate website is www.traconpharma.com. The information on, or that can be accessed through, our website is not part of this prospectus.

Implications of Being an Emerging Growth Company

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from specified disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- not being required to comply with the auditor attestation requirements in the assessment of our internal control over financial reporting;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements;
- · reduced disclosure obligations regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved.

We may take advantage of these provisions until December 31, 2020, or until such earlier time that we are no longer an emerging growth company. We will cease to be an emerging growth company on the date that is the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of \$1.07 billion or more; (ii) December 31, 2020; (iii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the previous three years; or (iv) the last day of the fiscal year in which we are deemed to be a large accelerated filer under the rules of the SEC. We may choose to take advantage of some, but not all, of the available exemptions. We have taken advantage of some reduced reporting burdens in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein. Accordingly, such information may be different than the information you receive from other public companies.

The Offering

Common stock offered by us Shares of our common stock having an aggregate offering price of up to \$11,550,332.

Manner of offering "At the market offerings" that may be made from time to time through our sales agent,

JonesTrading. See "Plan of Distribution".

Use of proceeds We intend to use the net proceeds from this offering, if any, for working capital and

general corporate purposes, including clinical trial expenses, research and development expenses, general and administrative expenses and manufacturing

expenses. See "Use of Proceeds".

Nasdaq global market symbol "TCON"

Risk factors

Investing in our common stock involves a high degree of risk. Please read the

information contained in and incorporated by reference under the heading "Risk Factors" in this prospectus supplement and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement, together with the other information included in or incorporated by reference into this prospectus supplement, before deciding whether to invest in our

common stock.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should carefully review the risks and uncertainties described below and under the heading "Risk Factors" contained any free writing prospectus that we may authorize for use in connection with this offering, and under similar headings in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2018, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus. These risks could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our common stock, and the occurrence of any of these risks might cause you to lose all or part of your investment. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations.

Risks Related to this Offering

Management will have broad discretion as to the use of the proceeds from this offering, and may not use the proceeds effectively.

Because we have not designated the amount of net proceeds from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

You may experience immediate and substantial dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that an aggregate of 5,550,158 shares of our common stock are sold at a price of \$2.10 per share pursuant to this prospectus supplement, which was the last reported sale price of our common stock on the Nasdaq Global Market on September 6, 2018, for aggregate gross proceeds of \$11,550,332, after deducting commissions and estimated aggregate offering expenses payable by us, you would experience immediate dilution of \$0.74 per share, representing the difference between our as adjusted net tangible book value per share as of June 30, 2018, after giving effect to this offering at the assumed offering price. The exercise of outstanding stock options and warrants and the settlement of outstanding restricted stock units may result in further dilution of your investment. See "Dilution" below for a more detailed illustration of the dilution you would incur if you participate in this offering.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, the documents we have filed with the SEC that are incorporated by reference herein and therein and any free writing prospectus that we have authorized for use in connection with this offering contain "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These statements relate to future events or to our future operating or financial performance, business trends and other information that is not historical information and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential" and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events, are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss in greater detail many of these risks under the headings "Risk Factors" in this prospectus supplement and in our filings with the SEC that are incorporated herein by reference, as may be updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement. These forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement. Forward-looking statements may include, but are not limited to, statements about:

- the success, cost, design and timing of results of our and our collaborators' ongoing clinical trials;
- our and our collaborators' plans to develop and commercialize our product candidates;
- the potential benefits of our collaboration arrangements, including our strategic licensing collaborations with Janssen and Ambrx, and our ability to enter into additional collaboration arrangements;
- our regulatory strategy and potential benefits associated therewith;
- · the timing of, and our ability to obtain and maintain, regulatory approvals for our product candidates;
- the rate and degree of market acceptance and clinical utility of any approved product candidate;
- the impact of competing products that are or may become available;
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- our product development, commercialization, marketing and manufacturing capabilities and strategy;
- our intellectual property position;
- our estimates regarding expenses, future revenues, capital requirements, the sufficiency of our current and expected cash resources, and our need for additional financing;
- · the anticipated benefits associated with our capital efficient clinical development model; and
- our anticipated use of proceeds from this offering or other financing transactions.

You should read this prospectus supplement, the accompanying prospectus, the documents we have filed with the SEC that are incorporated by reference herein and therein and any free writing prospectus that we have authorized for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements.

USE OF PROCEEDS

Except as described in any free writing prospectus that we have authorized for use in connection with this offering, we currently intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including clinical trial expenses, research and development expenses, general and administrative expenses and manufacturing expenses.

The amounts and timing of our use of the net proceeds from this offering will depend on a number of factors, such as the timing and progress of our clinical trials and research and development efforts, the timing and progress of any partnering efforts, any strategic transactions in which we may engage, and the competitive environment for our product candidates. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, our management will have broad discretion in the timing and application of these proceeds. Pending application of the net proceeds as described above, we intend to temporarily invest the proceeds in short-term, interest-bearing instruments.

DIVIDEND POLICY

We have never declared or paid any cash dividend on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Additionally, our credit agreement with Silicon Valley Bank contains covenants that restrict our ability to pay dividends.

DILUTION

If you invest in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share and the as adjusted net tangible book value per share after giving effect to this offering. We calculate net tangible book value per share by dividing our net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock. Dilution represents the difference between the portion of the amount per share paid by purchasers of shares in this offering and the as adjusted net tangible book value per share of our common stock immediately after giving effect to this offering. Our net tangible book value as of June 30, 2018, was approximately \$37.0 million, or \$1.24 per share.

After giving effect to the sale of our common stock pursuant to this prospectus in the aggregate amount of \$11,550,332 at an assumed offering price of \$2.10 per share, the last reported sale price of our common stock on the Nasdaq Global Market on September 6, 2018, and after deducting commissions and estimated aggregate offering expenses payable by us, our net tangible book value as of June 30, 2018 would have been \$48.1 million, or \$1.36 per share of common stock. This represents an immediate increase in the net tangible book value of \$0.12 per share to our existing stockholders and an immediate dilution in net tangible book value of \$0.74 per share to new investors. The following table illustrates this per share dilution:

\$2.10
1.36
\$0.74

The table above assumes for illustrative purposes that an aggregate of 5,500,158 shares of our common stock are sold pursuant to this prospectus supplement at a price of \$2.10 per share, the last reported sale price of our common stock on the Nasdaq Global Market on September 6, 2018, for aggregate gross proceeds of \$11,550,332. The shares are being sold from time to time at various prices pursuant to the Sales Agreement with JonesTrading. An increase of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$2.10 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$11,550,332 is sold during the term

of the Sales Agreement with JonesTrading at that price, would result in an adjusted net tangible book value per share after the offering of \$1.43 per share and would increase the dilution in net tangible book value per share to new investors in this offering to \$1.67 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$2.10 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$11,550,332 is sold during the term of the Sales Agreement with JonesTrading at that price, would decrease our adjusted net tangible book value per share after the offering to \$1.19 per share and would increase the net tangible book value per share to new investors in this offering to \$0.09 per share, after deducting commissions and estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

The above discussion and table are based on 29,829,598 shares of our common stock issued and outstanding as of June 30, 2018, and excludes the following:

- 3,033,137 shares of common stock issuable upon the exercise of outstanding stock options as of June 30, 2018, at a weighted-average exercise price of \$5.49 per share;
- 92,616 shares of common stock issuable upon the settlement of outstanding restricted stock units;
- 13,853,571 shares of common stock issuable upon the exercise of outstanding warrants as of June 30, 2018, at a weighted-average exercise price of \$2.73 per share;
- 1,765,542 shares of common stock issuable upon the exercise of outstanding pre-funded warrants as of June 30, 2018, at an exercise price of \$0.01 per share;
- 531,834 shares of common stock reserved for future issuance under our 2015 employee stock purchase plan as of June 30, 2018; and
- 708,050 shares of common stock reserved for future issuance under our 2015 equity incentive plan as of June 30, 2018.

To the extent that options or warrants have been or are exercised or restricted stock units are settled, or other shares are issued, investors purchasing shares in this offering could experience further dilution. 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.

PLAN OF DISTRIBUTION

We have entered into the Sales Agreement with JonesTrading under which we may issue and sell shares of our common stock having aggregate sales proceeds of up to \$11,505,332 from time to time through JonesTrading, acting as sales agent. JonesTrading may sell the common stock by any method that is deemed to be an "at the market offering" as defined in Rule 415 promulgated under the Securities Act.

Each time we wish to issue and sell common stock under the Sales Agreement, we will notify JonesTrading of the number or dollar value of shares to be issued, the dates on which such sales are anticipated to be made and any minimum price below which sales may not be made. Once we have so instructed JonesTrading, unless JonesTrading declines to accept the terms of this notice, JonesTrading has agreed to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such shares up to the amount specified on such terms. The obligations of JonesTrading under the Sales Agreement to sell our common stock are subject to a number of conditions that we must meet.

The settlement between us and JonesTrading is generally anticipated to occur on the second trading day following the date on which the sale was made. Sales of our common stock as contemplated in this prospectus supplement will be settled through the facilities of The Depository Trust Company or by such other means as we and JonesTrading may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

We will pay JonesTrading a commission equal to 2.5% of the gross proceeds we receive from the sales of our common stock. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. In connection with the sale of the common stock on our behalf, JonesTrading may, and will with respect to sales effected in an "at the market offering," be deemed to be an "underwriter" within the meaning of the Securities Act, and the compensation of JonesTrading will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to JonesTrading with respect to certain civil liabilities, including liabilities under the Securities Act. We have also agreed to reimburse JonesTrading for certain expenses incurred in connection with the offering of our common stock pursuant to the Sales Agreement, up to a maximum of \$25,000, along with quarterly disbursements of counsel up to \$2,500 per calendar quarter. We estimate that the total expenses for the offering, excluding compensation payable to JonesTrading under the terms of the Sales Agreement, will be approximately \$100,000.

The offering of our common stock pursuant to the Sales Agreement will terminate upon the earlier of (i) the sale of all of our common stock provided for in this prospectus supplement or (ii) termination of the Sales Agreement as permitted therein.

This summary of the material provisions of the Sales Agreement does not purport to be a complete statement of its terms and conditions. A copy of the Sales Agreement is filed with the SEC and is incorporated by reference into the registration statement to which this prospectus supplement relates. See "Where You Can Find More Information".

To the extent required by Regulation M, JonesTrading will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus supplement.

LEGAL MATTERS

The validity of the common stock offered by this prospectus supplement and the accompanying prospectus will be passed upon for us by Cooley LLP, San Diego, California. Duane Morris LLP, New York, New York is counsel for the sales agent in connection with this offering.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2017, as set forth in their report which is incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying prospectus are part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and do not contain all the information set forth in the registration statement. Whenever a reference is made in this prospectus supplement or the accompanying prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference in this prospectus supplement and the accompanying prospectus for a copy of such contract, agreement or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at http://www.sec.gov.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information into this prospectus supplement and the accompanying prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is considered to be part of this prospectus supplement, and later information that we file with the SEC will automatically update and supersede this information. The documents incorporated by reference into this prospectus supplement and the accompanying prospectus contain important information that you should read about us.

The following documents are incorporated by reference into this prospectus supplement and the accompanying prospectus:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, filed with the SEC on March 1, 2018;
- our Quarterly Reports on Form 10-Q filed with the SEC on May 10, 2018 and August 8, 2018;
- our Current Reports on Form 8-K filed with the SEC on January 22, 2018, February 21, 2018, March 23, 2018, April 10, 2018, May 4, 2018, May 21, 2018, June 13, 2018, June 15, 2018 and September 7, 2018;
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 from our definitive proxy statement on Schedule 14A (other than information furnished rather than filed), which was filed on April 25, 2018; and
- the description of our common stock which is registered under Section 12 of the Exchange Act, in our registration statement on Form 8-A, filed with the SEC on January 27, 2015, including any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference into this prospectus supplement and the accompanying prospectus all documents (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement but prior to the termination of the offering.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus supplement but not delivered with this prospectus supplement, including exhibits which are specifically incorporated by reference into such documents. You should direct any requests for documents by writing us at 4350 La Jolla Village Drive, Suite 800, San Diego, California 92122 or telephoning us at (858) 550-0780.

PROSPECTUS



\$25,000,000

Common Stock

We have entered into an At-The-Market Equity Offering Sales Agreement, or the sales agreement, with Stifel, Nicolaus & Company, Incorporated, or Stifel, relating to shares of our common stock offered by this prospectus. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$25.0 million from time to time through Stifel as our sales agent.

Our common stock is traded on the Nasdaq Global Market under the symbol "TCON." On April 1, 2016, the last reported sales price of our common stock was \$7.41 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be "at the market offerings" as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act, including sales made directly on or through The NASDAQ Global Market, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law. Stifel will act as sales agent using commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Stifel and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to Stifel for sales of common stock sold pursuant to the sales agreement will be an amount equal to 2.5% of the gross proceeds of any shares of common stock sold under the sales agreement. In connection with the sale of the common stock on our behalf, Stifel will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Stifel will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Stifel with respect to certain liabilities, including liabilities under the Securities Act or the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Investing in our common stock involves a high degree of risk. Please read the information contained in and incorporated by reference under the heading "Risk Factors" on page 4 of this prospectus, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus.

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.

STIFEL

The date of this prospectus is April 4, 2016.

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ABOUT THIS PROSPECTUS

This prospectus relates to the offering of our common stock. Before buying any of the common stock that we are offering, we urge you to carefully read this prospectus, together with the information incorporated by reference as described under the heading "Incorporation of Certain Information by Reference" in this prospectus. These documents contain important information that you should consider when making your investment decision.

This prospectus describes the specific terms of the common stock we are offering and also adds to, and updates information contained in the documents incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in any document incorporated by reference into this prospectus that was filed with the Securities and Exchange Commission, or SEC, before the date of this prospectus, on the other hand, you should rely on the information in this prospectus. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference into this prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in, or incorporated by reference into, this prospectus and in any free writing prospectus that we may authorize for use in connection with this offering. We have not, and Stifel has not, authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and Stifel is not, making an offer to sell or soliciting an offer to buy our common stock in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information appearing in this prospectus, the documents incorporated by reference into this prospectus, and in any free writing prospectus that we may authorize for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus, the documents incorporated by reference into this prospectus, and any free writing prospectus that we may authorize for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

PROSPECTUS SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus, including the information incorporated by reference into this prospectus, and the information included in any free writing prospectus that we may authorize for use in connection with this offering, including the information referred to under the heading "Risk Factors" in this prospectus on page 4 and in the documents incorporated by reference into this prospectus.

TRACON Pharmaceuticals, Inc.

Overview

We are a clinical stage biopharmaceutical company focused on the development and commercialization of novel targeted therapeutics for cancer, wet age-related macular degeneration, or wet AMD, and fibrotic diseases. We are a leader in the field of endoglin biology and are using our expertise to develop antibodies that bind to the endoglin receptor. Endoglin is essential to angiogenesis, the process of new blood vessel formation, and a key contributor to the development of fibrosis, or tissue scarring. Our lead product candidate, TRC105, is an endoglin antibody that is being developed for the treatment of multiple solid tumor types in combination with inhibitors of the vascular endothelial growth factor, or VEGF, pathway. Our TRC105 oncology clinical development plan is broad and involves a tiered approach. We are initially focused on two orphan indications, gestational trophoblastic neoplasia (GTN) and angiosarcoma, both of which highly express endoglin, the target of TRC105, and therefore may be more responsive to treatment with TRC105. We have seen complete ongoing responses in these tumor types and plan to initiate initial Phase 3 development in angiosarcoma and an international multicenter Phase 2 trial in GTN in 2016. The next tier of development includes ongoing Phase 2 trials in renal cell carcinoma, soft tissue sarcoma, glioblastoma, and hepatocellular carcinoma that are expected to produce top-line data in 2016, and that, if positive, would also enable Phase 3 development. We consider these indications attractive because the endpoints for regulatory approval may be attained more quickly than the endpoints for other indications. We also expect that these initial indications would be for the same lines of treatment for which the companion VEGF inhibitor is approved. Finally the third tier of development includes large indications. We plan to initiate dosing in a Phase 1 trial in lung cancer and in a phase 1/2 trial in breast cancer in 2016. Positive data in these larger indications would enable further de

In March 2014, Santen Pharmaceutical Co., Ltd., or Santen, a global ophthalmology company, licensed from us exclusive worldwide rights to develop and commercialize our endoglin antibodies for ophthalmology indications, including wet AMD. In June 2015, Santen filed an Investigational New Drug, or IND, Application with the U.S. Food and Drug Administration, or FDA, for the initiation of clinical studies for DE-122 in patients with wet AMD. DE-122 is the ophthalmic formulation of our proprietary endoglin antibody, TRC105. Santen initiated clinical development of DE-122 in wet AMD patients in 2015. We retain global rights to develop and commercialize our endoglin antibodies outside of the field of ophthalmology.

Our other product candidates are TRC205, an endoglin antibody that is in preclinical development for the treatment of fibrotic diseases, and TRC102, a small molecule that is in clinical development to reverse resistance to specific chemotherapeutics by inhibiting base-excision repair, or BER. We expect to complete testing of TRC205 in preclinical fibrosis models, including a preclinical model of NASH, in 2016. Positive preclinical data may allow for IND enabling manufacturing activities and preclinical studies to begin in 2016 at TRACON or through a corporate partnership. In initial clinical trials of more than 100 patients, TRC102 has shown good tolerability and promising anti-tumor activity, in combination with alkylating and antimetabolite chemotherapy in the treatment of lung cancer and glioblastoma. TRC102 began Phase 2 testing in mesothelioma in combination with the approved chemotherapeutic Alimta in 2015 and began Phase 2 testing in glioblastoma in combination with the approved chemotherapeutic Temodar in 2016. We retain global rights to develop and commercialize TRC102 in all indications.

We operate a clinical development model that emphasizes capital efficiency. Our experienced clinical operations and regulatory affairs groups enable us to eliminate the cost associated with hiring contract research organizations to manage clinical, regulatory and database aspects of our Phase 1 and Phase 2 clinical trials conducted in the United States. We have also collaborated with the NCI, which has selected TRC105 and TRC102 for federal funding of clinical development, as well as Case Western Reserve University, or Case Western. Under these collaborations, NCI has sponsored or is sponsoring nine completed or ongoing clinical trials of TRC105 and TRC102, and Case Western sponsored two clinical trials of TRC102. In addition, certain manufacturers of approved VEGF inhibitors that we are studying in combination with TRC105 have agreed to supply their drug at no cost for use in the applicable clinical trials. If merited by Phase 2 data, we expect to fund additional Phase 3 clinical trials of TRC105 and TRC102 and, based on NCI's past course of conduct with similarly situated pharmaceutical companies in which it has sponsored pivotal clinical trials following receipt of positive Phase 2 data, we anticipate that NCI will sponsor Phase 3 clinical trials in additional indications.

Corporate Information

We were incorporated in the state of Delaware in October 2004 as Lexington Pharmaceuticals, Inc. and we subsequently changed our name to TRACON Pharmaceuticals, Inc. in March 2005, at which time we relocated to San Diego, California. Our principal executive offices are located at 8910 University Center Lane, Suite 700, San Diego, California 92122, and our telephone number is (858) 550-0780. Our corporate website is www.traconpharma.com. The information on, or that can be accessed through, our website is not part of this prospectus, and you should not rely on any such information in making the decision whether to purchase our common stock.

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012. We will cease to be an emerging growth company on the date that is the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of \$1.0 billion or more; (ii) December 31, 2020; (iii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the previous three years; or (iv) the last day of the fiscal year in which we are deemed to be a large accelerated filer under the rules of the SEC.

Unless the context indicates otherwise, as used in this prospectus, the terms "TRACON," "the Company," "we," "us" and "our" refer to TRACON Pharmaceuticals, Inc., a Delaware corporation. This prospectus contains references to our trademarks and to trademarks 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 their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. 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 companies.

The Offering

Common stock offered by us pursuant to this prospectus

Shares of common stock having an aggregate offering price of up to \$25,000,000.

Manner of offering

"At-the-market" offering that may be made from time to time through our agent, Stifel. See "Plan of Distribution" on page 13 of this prospectus.

Use of proceeds

We intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including research and development expenses, general and administrative expenses and manufacturing expenses. See "Use of Proceeds" on page 6 of this prospectus.

NASDAQ Global Market listing

TCON

Risk factors

Investing in our common stock involves a high degree of risk. Please read the information contained in and incorporated by reference under the heading "Risk Factors" on page 4 of this prospectus and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus, together with the other information included in or incorporated by reference into this prospectus, before deciding whether to invest in our common stock.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should carefully review the risks and uncertainties described below and under the heading "Risk Factors" contained any free writing prospectus that we may authorize for use in connection with this offering, and under similar headings in our Annual Report on Form 10-K for the year ended December 31, 2015, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus. These risks could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our common stock, and the occurrence of any of these risks might cause you to lose all or part of your investment. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations.

Risks Related to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and may not use the proceeds effectively.

Because we have not designated the amount of net proceeds from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

You may experience immediate and substantial dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that an aggregate of 3,373,819 shares of our common stock are sold at a price of \$7.41 per share pursuant to this prospectus, which was the last reported sale price of our common stock on The NASDAQ Global Market on April 1, 2016, for aggregate gross proceeds of \$25.0 million, after deducting commissions and estimated aggregate offering expenses payable by us, you would experience immediate dilution of \$3.86 per share, representing the difference between our as adjusted net tangible book value per share as of December 31, 2015, after giving effect to this offering and the assumed offering price. The exercise of outstanding stock options and warrants may result in further dilution of your investment. See the section entitled "Dilution" below for a more detailed illustration of the dilution you would incur if you participate in this offering.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

We do not intend to pay dividends in the foreseeable future.

We have never paid cash dividends on our common stock and currently do not plan to pay any cash dividends in the foreseeable future.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering contain "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. These statements relate to future events or to our future operating or financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- the success, cost and timing of results of our and our collaborators' ongoing clinical trials;
- · our and our collaborators' plans to develop and commercialize our product candidates
- the potential benefits of our collaboration arrangements and our ability to enter into additional collaboration arrangements;
- · our regulatory strategy and potential benefits associated therewith;
- · the timing of, and our ability to, obtain and maintain regulatory approvals for our product candidates;
- the rate and degree of market acceptance and clinical utility of any approved product candidate;
- the success of competing products that are or may become available;
- · the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- our commercialization, marketing and manufacturing capabilities and strategy;
- · our intellectual property position;
- our estimates regarding expenses, future revenues, capital requirements, the sufficiency of our current and expected cash resources, and our need for additional financing;
- · our ability to realize the anticipated benefits associated with our capital efficiency focused initiatives; and
- our anticipated use of proceeds from this offering or other financing transactions.

In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential" and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events, are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss in greater detail, and incorporate by reference into this prospectus in their entirety, many of these risks under the headings "Risk Factors" on page 4 of this prospectus and in our Annual Report on Form 10-K for the year ended December 31, 2015, which is incorporated herein by reference, as may be updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement.

You should read this prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements.

USE OF PROCEEDS

Except as described in any free writing prospectus that we have authorized for use in connection with this offering, we currently intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including research and development expenses, general and administrative expenses and manufacturing expenses.

The amounts and timing of our use of the net proceeds from this offering will depend on a number of factors, such as the timing and progress of our clinical trials and research and development efforts, the timing and progress of any partnering efforts, any strategic transactions in which we may engage, and the competitive environment for our product candidates. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, our management will have broad discretion in the timing and application of these proceeds. Pending application of the net proceeds as described above, we intend to temporarily invest the proceeds in short-term, interest-bearing instruments.

DIVIDEND POLICY

To date, we have paid no cash dividends to our stockholders, and we do not intend to pay cash dividends in the foreseeable future.

DILUTION

If you invest in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share and the as adjusted net tangible book value per share after giving effect to this offering. We calculate net tangible book value per share by dividing our net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock. Dilution represents the difference between the portion of the amount per share paid by purchasers of shares in this offering and the as adjusted net tangible book value per share of our common stock immediately after giving effect to this offering. Our net tangible book value as of December 31, 2015, was approximately \$31.0 million, or \$2.54 per share.

After giving effect to the sale of our common stock pursuant to this prospectus in the aggregate amount of \$25.0 million at an assumed offering price of \$7.41 per share, the last reported sale price of our common stock on The NASDAQ Global Market on April 1, 2016, and after deducting commissions and estimated aggregate offering expenses payable by us, our net tangible book value as of December 31, 2015 would have been \$55.2 million, or \$3.55 per share of common stock. This represents an immediate increase in the net tangible book value of \$1.01 per share to our existing stockholders and an immediate dilution in net tangible book value of \$3.86 per share to new investors. The following table illustrates this per share dilution:

Assumed offering price per share		\$7.41
Net tangible book value per share as of December 31, 2015	\$2.54	
Increase per share attributable to new investors	1.01	
As adjusted net tangible book value per share as of December 31, 2015, after giving effect		
to this offering		3.55
Dilution per share to new investors purchasing shares in this offering		\$3.86

The table above assumes for illustrative purposes that an aggregate of 3,373,819 shares of our common stock are sold pursuant to this prospectus at a price of \$7.41 per share, the last reported sale price of our common stock on The NASDAQ Global Market on April 1, 2016, for aggregate gross proceeds of \$25.0 million. The shares are being sold from time to time at various prices pursuant to the sales agreement with Stifel. An increase of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$7.41 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$25.0 million is sold during the term of the sales agreement with Stifel at that price, would result in an adjusted net tangible book value per share after the offering of \$3.64 per share and would increase the dilution in net tangible book value per share to new investors in this offering to \$4.77 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$7.41 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$25.0 million is sold during the term of the sales agreement with Stifel at that price, would result in an adjusted net tangible book value per share after the offering to \$3.43 per share and would decrease the dilution in net tangible book value per share to new investors in this offering to \$2.98 per share, after deducting commissions and estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

The above discussion and table are based on 12,175,942 shares of our common stock issued and outstanding as of December 31, 2015, and excludes the following:

- 1,788,149 shares of common stock issuable upon the exercise of outstanding stock options as of December 31, 2015, at a weighted-average exercise price of \$7.76 per share;
- 57,173 shares of common stock issuable upon the exercise of outstanding warrants as of December 31, 2015, at a weighted-average exercise price of \$8.74 per share;
- 168,453 shares of common stock reserved for future issuance under our 2015 employee stock purchase plan as of December 31, 2015; and
- 507,345 shares of common stock reserved for future issuance under our 2015 equity incentive plan as of December 31, 2015.

To the extent that options or warrants outstanding as of December 31, 2015, have been or are exercised, or other shares are issued, investors purchasing shares in this offering could experience further dilution. 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.

DESCRIPTION OF CAPITAL STOCK

The following is a summary of the rights of our common and preferred stock and some of the provisions of our amended and restated certificate of incorporation and amended and restated bylaws and of the Delaware General Corporation Law. This summary is not complete. For more detailed information, please see our amended and restated certificate of incorporation and amended and restated bylaws, which are filed as exhibits to the registration statement to which this prospectus relates, as well as the relevant provisions of the Delaware General Corporation Law.

General

As of the date of this prospectus, our amended and restated certificate of incorporation authorizes us to issue 200,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share.

Common Stock

Outstanding Shares

As of January 25, 2016, there were 12,185,242 shares of our common stock outstanding and no shares of our preferred stock outstanding.

Voting

Our common stock is entitled to one vote for each share held of record. Each holder of our common stock is entitled to notice of any stockholders' meeting, is entitled to vote upon such matters and in such manner as may be provided by law, including the election of directors, and does not have cumulative voting rights.

Dividends

Subject to preferences that may be applicable to any then outstanding preferred stock, the holders of common stock are entitled to receive dividends, if any, on a pro rata basis, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our 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.

Rights and Preferences

Holders of our common stock have no preemptive, conversion or subscription rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our 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 we may designate and issue in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued in this offering will be, fully paid and nonassessable.

Preferred Stock

As of the date of this prospectus, we had no shares of preferred stock outstanding.

Under the amended and restated certificate of incorporation, our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of the common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in our control that may otherwise benefit holders of our common stock and may adversely affect the market price of the common stock and the voting and other rights of the holders of common stock. We have no current plans to issue any shares of preferred stock.

Equity Awards

As of January 25, 2016, 1,818,656 shares of common stock were issuable upon the exercise of outstanding stock options, at a weighted-average exercise price of \$7.80 per share, and restricted stock units covering 259,530 shares of common stock were outstanding.

Outstanding Warrants

As of January 25, 2016, there were outstanding warrants to purchase up to an aggregate of 57,173 shares of common stock issued to Silicon Valley Bank, or SVB, in connection with loan facilities we have entered into with SVB. The warrants expire between May 2022 and June 2024. The warrants have a weighted-average exercise price of \$8.74 per share and provide for cashless exercise at the option of the warrantholder, as well as the adjustment of the exercise price and the number of shares issuable upon the exercise of the warrants in the event of stock dividends, stock splits, reclassifications, exchanges, combinations or substitutions.

Registration Rights

Certain holders of our common stock, or their transferees, are entitled to the registration rights set forth below with respect to registration of the resale of such shares under the Securities Act pursuant to the amended and restated investors' rights agreement by and among us and certain of our stockholders.

Demand Registration Rights

Upon the written request of a majority of the holders of the registrable securities then outstanding that we file a registration statement under the Securities Act covering the registration of registrable securities where the aggregate offering price is at least \$5.0 million, we will be obligated to notify all holders of registrable securities of such request, within 20 days after receiving such request, and to use all commercially reasonable efforts to register the sale of all registrable securities that holders may request to be registered within 20 days after the mailing of such notice by the company. We are not required to file more than two registration statements which are declared or ordered effective. The underwriters of any underwritten offering will have the right to limit the number of shares having registration rights to be included in the registration statement.

"Piggyback" Registration Rights

If we register any securities for public sale for cash, holders of registration rights will have the right to include their shares in the registration statement. The underwriters of any underwritten offering will have the right to limit the number of shares having registration rights to be included in the registration statement, but not below 35% of the total number of shares included in the registration statement. The holders of the registration rights have waived such rights with respect to the registration statement to which this prospectus relates, as well as this offering or other offerings under such registration statement.

Form S-3 Registration Rights

For so long as we are eligible to file a registration statement on Form S-3, holders of not less than 20% of the registrable securities then outstanding have the right to demand that we file a registration statement on Form S-3 so long as the aggregate price to the public of the securities to be sold under the registration statement on Form S-3 is at least \$1.0 million, subject to specified exceptions, conditions and limitations.

Expenses of Registration

Generally, we are required to bear all registration and selling expenses incurred in connection with the demand, piggyback and Form S-3 registrations described above, other than underwriting discounts and commissions.

Expiration of Registration Rights

The demand, piggyback and Form S-3 registration rights discussed above will terminate as to a given holder of registrable securities upon the earlier of (1) with respect to any holder, at such time after this offering as Rule 144 or another similar exemption under the Securities Act is available for the sale of all of such holder's shares during a three-month period without registration, or (2) upon termination of the amended and restated investors' rights agreement.

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

Delaware Anti-Takeover Law

We are subject to Section 203 of the Delaware General Corporation Law, or Section 203. Section 203 generally prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- the interested stockholder owned at least 85% of the voting stock of the corporation outstanding upon consummation of the transaction, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to the consummation of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 662/3% of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- · any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Provisions of our amended and restated certificate of incorporation and amended and restated bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our amended and restated certificate of incorporation and amended and restated bylaws:

- permit our board of directors to issue up to 10,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate (including the right to approve an acquisition or other change in our control);
- provide that the authorized number of directors may be changed only by resolution adopted by a majority of the board of directors;
- provide that the board of directors or any individual director may only be removed with cause and the affirmative vote of the holders of at least 662/3% of the voting power of all of our then outstanding common stock;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law or subject to the rights of holders of preferred stock as designated from time to time, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner and also specify requirements as to the form and content of a stockholder's notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chairman of the board, our Chief Executive Officer or by the board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors (whether or not there exist any vacancies); and

• provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to us or our stockholders, (3) any action asserting a claim against the us arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation or bylaws, or (4) any action asserting a claim against us governed by the internal affairs doctrine.

The amendment of any of these provisions, with the exception of the ability of our board of directors to issue shares of preferred stock and designate any rights, preferences and privileges thereto, would require the affirmative vote of the holders of at least 662/3% of the voting power of all of our then outstanding common stock.

NASDAQ Global Market Listing

Our common stock has been approved for listing on The NASDAQ Global Market under the symbol "TCON".

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC. The transfer agent and registrar's address is 6201 15th Avenue, Brooklyn, New York 11219.

PLAN OF DISTRIBUTION

We have entered into an At-The-Market Equity Offering Sales Agreement with Stifel under which we may issue and sell shares of our common stock having aggregate sales proceeds of up to \$25.0 million from time to time through Stifel acting as agent. Stifel may sell the common stock by any method that is deemed to be an "at the market offering" as defined in Rule 415 promulgated under the Securities Act, including sales made directly on or through the NASDAQ Global Market or any other existing trading market for the common stock in the United States or to or through a market maker. Stifel also may sell the common stock in negotiated transactions, subject to our prior approval.

Each time we wish to issue and sell common stock under the sales agreement, we will notify Stifel of the number of shares to be issued, the dates on which such sales are anticipated to be made and any minimum price below which sales may not be made. Once we have so instructed Stifel, unless Stifel declines to accept the terms of this notice, Stifel has agreed to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such shares up to the amount specified on such terms. The obligations of Stifel under the sales agreement to sell our common stock are subject to a number of conditions that we must meet.

The settlement between us and Stifel is generally anticipated to occur on the third trading day following the date on which the sale was made. Sales of our common stock as contemplated in this prospectus will be settled through the facilities of The Depository Trust Company or by such other means as we and Stifel may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

We will pay Stifel a commission equal to 2.5% of the gross proceeds we receive from the sales of our common stock. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. In connection with the sale of the common stock on our behalf, Stifel may, and will with respect to sales effected in an "at the market offering," be deemed to be an "underwriter" within the meaning of the Securities Act, and the compensation of Stifel will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to Stifel with respect to certain civil liabilities, including liabilities under the Securities Act. We have also agreed to reimburse Stifel for certain expenses incurred in connection with the offering of our common stock pursuant to the sales agreement, up to a maximum of \$25,000. We estimate that the total expenses for the offering, excluding compensation payable to Stifel under the terms of the sales agreement, will be approximately \$150,000.

The offering of our common stock pursuant to the sales agreement will terminate upon the earlier of (i) the sale of all of our common stock provided for in this prospectus or (ii) termination of the sales agreement as permitted therein.

This summary of the material provisions of the sales agreement does not purport to be a complete statement of its terms and conditions. A copy of the sales agreement is filed with the SEC and is incorporated by reference into the registration statement to which this prospectus relates. See "Where You Can Find More Information".

To the extent required by Regulation M, Stifel will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus.

LEGAL MATTERS

Cooley LLP, San Diego, California, has passed upon the validity of the common stock offered by this prospectus. LeClairRyan, A Professional Corporation, New York, New York, is counsel for Stifel in connection with this offering.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2015, as set forth in their report which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus relates to a registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth or incorporated by reference in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference in this prospectus for a copy of such contract, agreement or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at http://www.sec.gov. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room. We maintain a website at www.traconpharma.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus or part of any prospectus supplement.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The documents incorporated by reference into this prospectus contain important information that you should read about us.

The following documents are incorporated by reference into this prospectus:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 and filed with the SEC on February 19, 2016;
- our Current Reports on Form 8-K (other than information furnished rather than filed) filed with the SEC on January 25, 2016 and February 1, 2016; and
- the description of our common stock which is registered under Section 12 of the Exchange Act, in our registration statement on Form 8-A, filed with the SEC on January 27, 2015, including any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference into this prospectus all documents (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus but prior to the termination of the offering. These documents include, without limitation, Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, as well as proxy statements.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits which are specifically incorporated by reference into such documents. You should direct any requests for documents by writing us at 8910 University Center Lane, Suite 700, San Diego, California 92122 or telephoning us at (858) 550-0780.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement.



\$11,505,332

Common Stock

PROSPECTUS SUPPLEMENT



September 6, 2018