

The information in this preliminary prospectus supplement is not complete and may be changed. A registration statement relating to these securities has been declared effective by the Securities and Exchange Commission. The preliminary prospectus supplement and the accompanying base prospectus are not an offer to sell these securities, and we are not soliciting offers to buy these securities, in any state or other jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED FEBRUARY 12, 2018

PRELIMINARY PROSPECTUS SUPPLEMENT
(to Prospectus Dated February 6, 2018)



Common Stock

We are offering _____ shares of our common stock.

Our common stock trades on the Nasdaq Capital Market under the symbol "CBIO." On February 9, 2018, the last reported sale price of the common stock on the Nasdaq Capital Market was \$32.15 per share.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD CAREFULLY READ AND CONSIDER THE RISK FACTORS DESCRIBED IN THIS PROSPECTUS SUPPLEMENT, THE ACCOMPANYING BASE PROSPECTUS AND IN THE DOCUMENTS INCORPORATED BY REFERENCE INTO THIS PROSPECTUS SUPPLEMENT. SEE "[RISK FACTORS](#)" BEGINNING ON PAGE S-5.

	Per Share	Total
Public Offering Price	\$ _____	\$ _____
Underwriting Discounts and Commissions(1)	\$ _____	\$ _____
Proceeds to Catalyst Biosciences, Inc. (before expenses)	\$ _____	\$ _____

(1) See "Underwriting" for additional information regarding underwriter compensation.

Neither the Securities and Exchange Commission 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.

Delivery of the shares of common stock is expected to be made on or about February _____, 2018.

Sole Bookrunning Manager

JonesTrading

Joint Bookrunner

Ladenburg Thalmann

Lead Manager

LifeSci Capital

The date of this prospectus supplement is _____, 2018

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Prospectus

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is a supplement to the accompanying base prospectus dated February 6, 2018 that is also a part of this document. This prospectus supplement and the accompanying base prospectus are part of a registration statement that we have filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. Under the shelf registration process, from time to time, we may sell any of the securities described in the accompanying base prospectus in one or more offerings. In this prospectus supplement, we provide you with specific information about this offering. This prospectus supplement, the accompanying base prospectus and the documents incorporated by reference herein and therein include important information about us, our common stock and other information you should know before investing in our common stock. This prospectus supplement also adds, updates and changes information contained in the accompanying base prospectus. You should read both this prospectus supplement and the accompanying base prospectus as well as the additional information described in this prospectus supplement under the headings “Where You Can Find More Information” and “Incorporation of Certain Documents by Reference” before investing in our common stock. To the extent that any statement that we make in this prospectus supplement is inconsistent with the statements made in the accompanying base prospectus or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, the statements made in the accompanying base prospectus, or such an earlier filing, as applicable, are deemed modified or superseded by the statements made 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 the accompanying base prospectus—the statement having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, in the accompanying base prospectus, in any other prospectus supplement and in any free writing prospectus filed by us with the SEC. We have not, and the underwriters have 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 the underwriters are 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 base prospectus and the documents incorporated by reference is accurate only as of each of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates. To the extent that any statement that we make in this prospectus supplement differs from or is inconsistent with statements made in the accompanying base prospectus or any documents incorporated by reference therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying base prospectus and such documents incorporated by reference therein.

We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus outside the United States. This prospectus does 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 by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

For purposes of this prospectus, references to the terms “Catalyst,” “the Company,” “we,” “us” and “our” refer to Catalyst Biosciences, Inc., unless the context otherwise requires.

This prospectus and the information incorporated by reference herein and therein include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus are the property of their respective owners.

PROSPECTUS SUPPLEMENT SUMMARY

The following summary highlights certain information contained elsewhere in this prospectus supplement, the accompanying base prospectus, any free writing prospectus that we have been authorized to use and the documents incorporated by reference herein and in the accompanying base prospectus. This summary does not contain all the information you will need in making your investment decision. You should carefully read this entire prospectus supplement, the accompanying base prospectus, any free writing prospectus that we have been authorized to use and the documents incorporated by reference herein and in the accompanying base prospectus. You should pay special attention to the “Risk Factors” section of this prospectus supplement and the financial statements and other information incorporated by reference herein and in the accompanying base prospectus.

Company Overview

We are a clinical-stage biopharmaceutical company focused on developing novel medicines to address serious medical conditions for individuals who need new or better treatment options. We used a scientific approach to engineer several protease-based therapeutic candidates. We are focusing our product development efforts in the field of hemostasis (the process that regulates bleeding) and have a mission to develop valuable therapies for individuals with hemophilia.

Our most advanced program is an improved next-generation coagulation Factor VIIa variant, marzeptacog alfa (activated) (“MarZAA”), is currently enrolling individuals in a Phase 2/3 subcutaneous dosing trial. Our next most advanced program is another next-generation coagulation factor, a Factor IX variant, CB 2679d/ISU 304, that has completed enrollment of a Phase 1/2 clinical study, for which we have disclosed top-line data. In addition, we have a Factor Xa variant, that has reached the advanced lead preclinical stage of development. Proteases regulate several complex biological cascades, or sequenced biochemical reactions, including the coagulation cascade that controls bleeding (hemostasis) in hemophilia and non-hemophilia settings and the complement cascade that causes inflammation and tissue damage in certain diseases.

Additional details of these programs and related strategic agreements are contained in our Annual Report on Form 10-K for the year ended December 31, 2016 and in our quarterly report on Form 10-Q for the quarter ended September 30, 2017.

Recent Developments

Reverse Stock Split

On February 10, 2017, we effected a reverse stock split of our shares of common stock at a ratio of one-for-fifteen (“2017 Reverse Stock Split”). The 2017 Reverse Stock Split was approved by our stockholders at our special meeting of stockholders held on February 2, 2017. As a result of the 2017 Reverse Stock Split, every fifteen (15) shares of our common stock outstanding was automatically changed and reclassified into one (1) new share of common stock. Holders of common stock that would have otherwise received a fractional share of common stock pursuant to the 2017 Reverse Stock Split received cash in lieu of the fractional share. Unless indicated otherwise, the numbers set forth in this prospectus have been adjusted to reflect the 2017 Reverse Stock Split.

December 2017 Financing

On December 22, 2017, we closed an underwritten public offering of 1,105,263 shares of our common stock, offered at a price of \$9.50 per share to the public. The gross proceeds to the Company from this offering were approximately \$10.5 million, before deducting underwriting discounts and commissions and other estimated offering expenses payable by us. All shares in the offering were sold by us. JonesTrading Institutional Services LLC and Ladenburg Thalmann & Co. Inc. acted as Joint Book-Running Managers and LifeSci Capital LLC acted as a Co-Manager.

CB 2679d/ISU 304 Developments

On December 9, 2017, we announced interim Phase 1/2 data on our subcutaneously administered, prophylactic Factor IX variant CB 2679d/ISU304 in an oral presentation at the 59th American Society of Hematology (ASH) Annual Meeting and Exposition. The data demonstrates that subcutaneous delivery of CB 2679d significantly increases the factor IX (FIX) activity half-life to 98.7 hours. Data and results were presented from the first three cohorts of the Phase 1/2 trial of CB 2679d in patients with severe hemophilia B. During these first three cohorts, patients received single intravenous (IV) and subcutaneous (SQ) doses of CB 2679d. Results from cohort 1, which compared 75 IU/kg IV CB 2679d with 75 IU/kg IV BeneFIX, showed that IV CB 2679d is approximately 22 times more potent and has a significantly longer half-life (27 vs 21 hours, $p=0.0014$) and mean residence time than BeneFIX (36 hours vs 25 hours, $p=0.00004$). Cohorts 2 and 3 compared 75 IU/kg IV CB 2679d with 75 IU/kg and 150 IU/kg SQ CB 2679d respectively. These results showed that SQ delivery of CB 2679d had a bioavailability of 18.5% and significantly increases the FIX activity half-life to 98.7 hours vs 27.6 hours for a IV dose of 75 IU/kg, ($p = 0.005$).

No serious adverse events were observed.

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On December 18, 2017, we announced that the Korean Ministry of Food and Drug Safety has approved a protocol amendment to omit single dose Cohort 4 (300 IU/kg daily – “high dose”) and move directly to multi-dose Cohort 5 at 150 IU/kg daily in the ongoing Phase 1/2 multi-dose study of CB 2679d/ISU304, our highly potent next-generation coagulation Factor IX (FIX) variant, in individuals with severe hemophilia B.

On February 9, 2018, we announced top-line data from our Phase 1/2 study of subcutaneous prophylactic candidate CB 2679d/ISU304 being developed for the treatment of hemophilia B in an oral presentation at the 11th Annual Congress of The European Association for Haemophilia and Allied Disorders in Madrid. After six days of once-daily subcutaneous (SQ) dosing, CB 2679d increased FIX activity levels in 5 patients who were each dosed daily with 140 IU/kg SQ, from very low levels after washout of prior therapy to a median FIX activity level of 16% (range 11.5-18%), that is well into the mild hemophilia range (5-40%), and is higher than a level required to prevent hemarthrosis. The observed increase in FIX activity levels after the daily dosing was linear, indicating that continued SQ dosing may achieve high-mild hemophilia or even normal FIX clotting activity. Terminal SQ half-life was 63.2 hours (interquartile range 60.2-64 hours) with the result that activity levels were still 4-6.4%, 5 days after the last dose. No inhibitors to CB 2679d or FIX were induced to date. One subject had moderate adverse events of pain, erythema and redness after the first 2 injections and mild rating after subsequent injections. Other subjects in cohort 5 reported some of these adverse events, mainly with initial injections. Two subjects had bruising after injection when FIX activity levels were low that did not occur with subsequent injections as FIX activity levels rose.

The data to date supports the potential of achieving normal FIX levels in individuals with hemophilia B with daily or less frequent subcutaneous dosing.

Initiation of Phase 2/3 Trial of Marzeptacog Alfa (activated) for Prophylaxis in Hemophilia A or B with Inhibitors

On January 4, 2018, we announced the initiation and open enrollment of the Phase 2 part of the Phase 2/3 program of marzeptacog alfa (activated) (MarzAA). This Phase 2 open-label, subcutaneous efficacy trial in individuals with hemophilia A or B with inhibitors will evaluate the ability of MarzAA to eliminate, or minimize, spontaneous bleeding episodes. The primary endpoint is a reduction in annualized bleed rate that will be compared with each individual’s historical annualized bleed rate as the control. Safety and tolerability of daily subcutaneous dosing and potential inhibitor formation will also be monitored. The trial will enroll up to 12 individuals with hemophilia and an inhibitor across approximately ten clinical trial sites globally. Interim data is expected to be announced in the first half of 2018.

New Strategic Research Collaboration for Factor 3 (C3) Products

In October 2017 we announced a strategic research collaboration with Mosaic Biosciences, Inc. (“Mosaic”) to develop intravitreal anti-complement factor 3 (C3) products for the treatment of Dry AMD and other retinal diseases. According to the agreement the Company and Mosaic will co-fund the research, and Mosaic will receive a portion of any licensing income we receive from the results of our development activities with Mosaic. Dr. Usman, our Chief Executive Officer and a member of our board of directors, and Mr. Lawlor, a member of our board of directors, are members of the board of directors of Mosaic. The transaction was reviewed by disinterested members of our board of directors and approved by our audit committee.

Board of Directors

On December 14, 2017, the Company announced the resignation of Dr. Harold E. Selick from the Company’s Board of Directors, effective February 15, 2018. Dr. Selick’s resignation is not the result of any disagreement with the Company related to its operations, policies or practices. The Board has appointed Augustine (Gus) Lawlor to serve as Chairman of the Board effective February 15, 2018.

Company Information

Our corporate headquarters are located in South San Francisco, California 94080. Our telephone number is (650) 871-0761, and our website address is www.catalystbiosciences.com. The information on or accessible through our website does not constitute part of this prospectus supplement or the accompanying base prospectus and should not be relied upon in connection with making any investment in our securities.

The common stock of Catalyst is listed on the Nasdaq Capital Market under symbol “CBIO.”

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the specific risks described below and the additional risks described in our Annual Report on Form 10-K for the year ended December 31, 2016 and our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017, June 30, 2017 and September 30, 2017, which are incorporated by reference in this prospectus in their entirety, as well as the other information contained in this prospectus supplement, the accompanying base prospectus and the other documents incorporated by reference, before making an investment decision. See the sections of this prospectus supplement entitled “Where You Can Find More Information” and “Incorporation of Certain Information By Reference.” Any of the risks we describe below or in the information incorporated herein by reference and in the accompanying base prospectus could cause our business, financial condition or operating results to suffer. The market price of our common stock could decline if one or more of these risks and uncertainties develop into actual events. You could lose all or part of your investment.

Risks Related to Our Business

We are substantially dependent upon the success of marzeptacog alfa (activated) and CB 2679d/ISU304.

The failure of marzeptacog alfa (activated) or CB 2679d/ISU304 to achieve successful clinical trial endpoints, or delays in clinical development, unanticipated adverse side effects or any other adverse developments or information related to marzeptacog alfa (activated) or CB 2679d/ISU304 would significantly harm our business, its prospects and the value of the company’s common stock. We expect to continue the Phase 2 portion of a Phase 2/3 subcutaneous dosing trial of marzeptacog alfa (activated) in individuals with hemophilia A and B inhibitors and to announce interim data in the first half of 2018. We are also exploring plans for a Phase 2b trial of CB 2679d/ISU304 in patients with hemophilia B. There is no guarantee that the results of these clinical trials, if they are completed or occur, will be positive or will not generate unanticipated safety concerns. The Phase 1 clinical trial of marzeptacog alfa (activated) was a single-dose escalation trial that would not, compared to multi-dose trials, be expected to exclude the possibility of an immunological response to marzeptacog alfa (activated) in individuals who received the product candidate. After completion of the dosing portion of the Phase 1 clinical trial, Pfizer observed a positive result in an assay for a potential non-neutralizing anti-drug antibody in a single individual at a time point 60 days post-dosing that was not confirmed by testing of a subsequent, follow-up blood draw. Additional confirmatory testing indicated that this was due to a false positive assay result; however, there can be no assurance that anti-marzeptacog alfa (activated) antibodies will not be observed. CB 2679d/ISU304 has only recently been used in a multi-dose subcutaneous clinical trial in five patients. While so far none of the patients in this trial developed any inhibitory antibodies, there can be no assurance that such antibodies will not be observed in the future, either in the patients who have already received CB 2679d/ISU 304, or in new patients. If the current subcutaneous multi-dose trials of marzeptacog alfa (activated) or of CB 2679d/ISU304 demonstrate a treatment-related neutralizing immunological response in individuals, development of such product could be halted. Even if the next trials of marzeptacog alfa (activated) and CB 2679d/ISU304 are positive, each product candidate may require substantial additional trials and other testing before being approved for marketing.

Marzeptacog alfa (activated) and CB 2679d/ISU304 are not expected to be commercially available in the near term, if at all. Further, the commercial success of each product candidate will depend upon its acceptance by physicians, patients, third-party payors and other key decision-makers as a therapeutic and cost effective alternative to currently available products. If we are unable to successfully develop, obtain regulatory approval for and commercialize marzeptacog alfa (activated) and CB 2679d/ISU304, our ability to generate revenue from product sales will be significantly delayed and our business will be materially and adversely affected, and we may not be able to earn sufficient revenues to continue as a going concern.

Even if the FDA or other regulatory agency approves marzeptacog alfa (activated) or CB 2679d/ISU304, the approval may impose significant restrictions on the indicated uses, conditions for use, labeling, advertising, promotion, marketing and/or production of such product and may impose ongoing commitments or requirements for post-approval studies, including additional research and development and clinical trials. The FDA and other agencies also may impose various civil or criminal sanctions for failure to comply with regulatory requirements, including withdrawal of product approval. Regulatory approval from authorities in foreign countries will be needed to market marzeptacog alfa (activated) or CB 2679d/ISU304 in those countries. Approval by one regulatory authority does not ensure approval by regulatory authorities in other jurisdictions. If we fail to obtain approvals from foreign jurisdictions, the geographic market for marzeptacog alfa (activated) or CB 2679d/ISU304 would be limited.

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We are developing the clinical trial plan for CB 2679d/ISU304, and the timing and expense of future clinical trials of CB 2679d/ISU304 is uncertain.

While we have announced top-line data from our Phase 1/2 study of subcutaneous prophylactic candidate CB 2679d/ISU304 being developed for the treatment of hemophilia B, we are still analyzing data from this clinical trial and are evaluating plans for subsequent clinical trials, including the specific trial design, inclusion/exclusion criteria, number of patients and other factors. We are not certain when additional trials of CB 2679d/ISU304 will begin, how long such trials will take to enroll or complete, or how much they will cost. Any additional trials we conduct may not start when anticipated, may take longer to enroll or cost more than expected, and may not generate positive results.

We plan to transition manufacture of CB 2679d/ISU304 to a contract manufacturer.

To date we have relied on ISU Abxis to manufacture clinical trial supplies of CB 2679d/ISU304. For additional clinical trial material and further development of CB 2679d/ISU304, we intend to engage a third party contract manufacturer, and to modify the manufacturing process to increase manufacturing capacity for CB 2679d/ISU304. There can be no assurance that we will complete a new agreement with a contract manufacturer on commercially reasonable terms, if at all. Even if we complete such a contract, the transfer of the manufacturing process from ISU to the new manufacturer is complex and there can be no assurance this technology transfer will be completed in a timely manner, or that the third party will be able to manufacture sufficient quantities of CB 2679d/ISU304 to satisfy our clinical trial requirements in a timely manner, within expected budgets or at all.

Risks Related to the Offering

A substantial number of shares may be sold in the market following this offering, which may depress the market price for our common stock.

Sales of a substantial number of shares of our common stock in the public market following this offering could cause the market price of our common stock to decline. Upon completion of this offering, based on our shares outstanding as of January 31, 2018, we will have outstanding an aggregate of shares of common stock, assuming no exercise of outstanding options and warrants and no conversion of our Series A Preference Shares or redeemable convertible notes. A substantial majority of the outstanding shares of our common stock are, and all of the shares sold in this offering upon issuance will be, freely tradable without restriction or further registration under the Securities Act of 1933, as amended, or the Securities Act, unless these shares are owned or purchased by "affiliates" as that term is defined in Rule 144 under the Securities Act. In addition, we have also registered all of the shares of common stock that we may issue under our outstanding stock options and employee stock incentive plans, and as of January 31, 2018, 985,741 shares of common stock were issuable upon the exercise of stock options outstanding at a weighted average exercise price of \$13.92 per share, 190,886 additional shares of common stock were reserved for issuance under our stock option plan, 994,767 shares of common stock were issuable upon the exercise of warrants outstanding at a weighted exercise price of \$7.19 per share, 716,000 shares of common stock were issuable upon conversion of 3,580 shares of Series A Convertible Preferred Shares outstanding, and 36,648 shares of common stock were issuable upon conversion of redeemable convertible notes at a rate of \$137.85 per share. As a result, these shares can be freely sold in the public market upon issuance, subject to restrictions under the securities laws.

Management will have broad discretion as to the use of proceeds from this offering and we may use the net proceeds in ways with which you may disagree.

We intend to use the net proceeds of this offering for general corporate purposes, which may include clinical and manufacturing activities for CB 2679d our FIX clinical program, Marzeptacog alfa (activated), research and development activities, capital expenditures, facilities expansion and working capital needs. Our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. Accordingly, you will be relying on the judgment of our management with regard to the use of net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development of our product candidates and cause the price of our common stock to decline.

You may experience future dilution as a result of this offering, future equity offerings or other equity issuances.

If you invest in our common stock, your interest may be diluted. Dilution per share to new investors in this offering represents

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the amount, if any, by which the price per share paid by purchasers for our common stock in this offering exceeds the net tangible book value per share of our common stock following the issuance of stock in this offering, any future equity offering or any other equity issuances. After giving effect to the sale of shares of common stock offered by this prospectus supplement at a public offering price of \$ _____ per share, and after deducting commissions and estimated aggregate offering expenses payable by us, our as adjusted net tangible book value as of January 31, 2018 would have been approximately \$ _____ million, or approximately \$ _____ per share. As a result, new investors would not experience dilution from this offering.

In addition, in order to raise additional capital, we may in the future offer and issue additional shares of our common stock or other securities convertible into or exchangeable for our common stock. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater 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 other securities convertible into or exchangeable for our common stock in future transactions may be higher or lower than the price per share in this offering. For example, as of January 31, 2018, an aggregate of 985,741 shares of common stock were issuable upon the exercise of stock options outstanding at a weighted average exercise price of \$13.92 per share, 190,886 additional shares of common stock were reserved for issuance under our stock option plan, 994,767 shares of common stock issuable upon the exercise of warrants outstanding at a weighted exercise price of \$7.19 per share, 716,000 shares of common stock were issuable upon conversion of 3,580 shares of Series A Convertible Preferred Shares outstanding, and 36,648 shares of common stock were issuable upon conversion of redeemable convertible notes at a rate of \$137.85 per share. You may incur dilution upon the grant of any shares pursuant to such plan, upon vesting of any stock awards under any such plan, upon exercise of any such outstanding options or outstanding warrants, or upon the conversion of Series A Preference Shares or redeemable convertible notes.

We do not anticipate paying dividends on our common stock in the foreseeable future.

We currently plan to invest all available funds, including the proceeds from this offering, and future earnings, if any, in the development and growth of our business. We currently do not anticipate paying any cash dividends on our common stock in the foreseeable future. As a result, a rise in the market price of our common stock, which is uncertain and unpredictable, will be your sole source of potential gain in the foreseeable future, and you should not rely on an investment in our common stock for dividend income.

CAUTIONARY NOTE REGARDING FORWARD LOOKING INFORMATION

This prospectus supplement and the accompanying base prospectus and the documents we incorporate by reference in this prospectus supplement and the accompanying base prospectus 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. All statements, other than statements of historical facts, included or incorporated in this prospectus supplement and the accompanying base prospectus regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. We may, in some cases, use words such as “believes,” “expects,” “may,” “will,” “should,” “seeks,” “intends,” “plans,” “pro forma,” “estimates,” or “anticipates” or the negative of these words and phrases or other variations of these words and phrases or comparable terminology, although not all forward-looking statements contain these identifying words. These statements are based on assumptions and assessments made by our management in light of its experience and its perception of historical trends, current conditions, expected future developments and other factors our management believes to be appropriate. These forward-looking statements are subject to a number of risks and uncertainties, including those risks described or incorporated by reference in this prospectus supplement and the accompanying base prospectus under “Risk Factors.”

Forward-looking statements included or incorporated by reference in this prospectus include, for example, statements about:

- the strategies, prospects, plans, expectations or objectives of management for future operations;
- our focus on specific product candidates;
- the progress, outcomes, scope or duration of the development of product candidates or programs;
- the benefits that may be derived from product candidates or the commercial or market opportunity in any target indication;
- our ability to protect intellectual property rights;
- our anticipated operations, financial position, revenues, costs or expenses, statements regarding future economic conditions or performance;
- potential regulatory filings for or approval of any of our product candidates;
- the progress of our third-party collaborations, including estimated milestones;
- our intention to seek, and the ability to enter into, strategic alliances and collaborations;
- the responsibilities of our collaborators, including the responsibility to make cost reimbursement, milestone, royalty and other payments to us, and our expectations regarding our collaborators’ plans with respect to our products;
- our responsibilities to our collaborators, including our responsibilities to conduct research and development, clinical trials and manufacture products;
- the results and timing of clinical trials and the possible commencement of future clinical trials;
- conditions for obtaining regulatory approval of our product candidates;
- submission and timing of applications for regulatory approval;
- the impact of U.S. Food and Drug Administration (FDA) and other government regulations on our business;
- uncertainties associated with obtaining and protecting patents and other intellectual property rights, as well as avoiding the intellectual property rights of others;
- products and companies that will compete with the products we license to third-party collaborators;
- the possibility we may commercialize our own products and build up our commercial, sales and marketing capabilities and other required infrastructure;
- our employees, including the number of employees and the continued service of key management, technical and scientific personnel;
- our future performance and obligations under agreements we have entered into, such as the definitive agreement related to the termination of the Pfizer Agreement;

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- our future performance and our expectations regarding our ability to achieve profitability;
- requirements for us to purchase supplies and raw materials from third parties, and the ability of third parties to provide us with required supplies and raw materials;
- sufficiency of our cash resources, anticipated capital requirements and capital expenditures and our need for additional financing;
- the composition of future revenues;
- accounting policies and estimates, including revenue recognition policies; and
- statements of belief and any statement of assumptions underlying any of the foregoing.

Any such forward-looking statements are not guarantees of future performance and actual results, developments and business decisions may differ from those contemplated by such forward-looking statements. All such forward looking statements are made only as of the date of the document in which they are contained, based on information available to us as of the date of that document, and we caution you not to place undue reliance on forward looking statements in light of the risks and uncertainties associated with them. We disclaim any duty to update any forward-looking statements. You should also carefully consider other information set forth in reports or other documents that we file with the SEC.

USE OF PROCEEDS

We expect the net proceeds from this offering to be approximately \$ _____ million, based on the public offering price of \$ _____ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from the sale of the shares of common stock under this prospectus supplement for general corporate purposes and for clinical and manufacturing activities for CB 2679d, our FIX program, and Marzeptacog alfa (activated). The development activities of CB 2679d include completion of a Phase 2b clinical study and preparation for a pivotal clinical trial including manufacturing of commercial scale material and associated supporting studies. The development activities for Marzeptacog alfa (activated) include completion of Phase 2 of a Phase 2/3 study and preparation for a pivotal clinical trial including manufacturing of material and associated supporting studies. We may also use the proceeds of this offering for additional research and development activities, capital expenditures, selling, general and administrative costs, facilities expansion, and to meet working capital needs. We expect from time to time to evaluate the acquisition of businesses, products and technologies for which a portion of the net proceeds may be used, although we currently are not planning or negotiating any such transactions.

The amounts actually expended for each purpose may vary significantly depending upon numerous factors, including the amount and timing of the proceeds from this offering and progress with the development of our products. Expenditures will also depend upon the establishment of collaborative arrangements with other companies, the availability of additional financing and other factors. Investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of shares of our common stock.

As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses of the proceeds from this offering. Accordingly, we will retain broad discretion over the use of such proceeds. Pending the use of the net proceeds from this offering as described above, we intend to invest the net proceeds in investment-grade, interest-bearing securities.

PRICE RANGE OF COMMON STOCK

Our common stock trades on the Nasdaq Capital Market under the symbol “CBIO.” The last reported sale price for our common stock on February 9, 2018 was \$32.15 per share. As of February 9, 2018, we had approximately 60 holders of record of our common stock. The number of record holders was determined from the records of our transfer agent and does not include beneficial owners of common stock whose shares are held in the names of various security brokers, dealers, and registered clearing agencies. A description of the common stock that we are issuing in this offering is set forth under the heading “Description of Capital Stock” beginning on page 5 of the accompanying base prospectus.

The following table sets forth for the periods indicated the high and low sale prices per share of our common stock as reported on the Nasdaq Capital Market, but as adjusted to reflect applicable reverse stock splits:

	<u>High</u>	<u>Low</u>
Fiscal Year ended December 31, 2015		
First Quarter	\$ 45.75	\$37.50
Second Quarter	\$ 43.65	\$33.90
Third Quarter	\$177.00	\$33.15
Fourth Quarter	\$ 85.35	\$30.00
Fiscal Year ended December 31, 2016		
First Quarter	\$ 47.25	\$24.30
Second Quarter	\$ 28.20	\$18.15
Third Quarter	\$ 23.40	\$17.25
Fourth Quarter	\$ 18.30	\$ 8.10
Fiscal Year ending December 31, 2017		
First Quarter	\$ 15.01	\$ 4.73
Second Quarter	\$ 8.87	\$ 3.74
Third Quarter	\$ 5.10	\$ 3.19
Fourth Quarter	\$ 13.69	\$ 4.52
Fiscal Year ending December 31, 2018		
First Quarter (through February 9, 2018)	\$ 32.15	\$13.04

The market price of our common stock has been and may continue to be subject to wide fluctuations in response to a number of events and factors, such as progress in our development programs, quarterly variations in our operating results, announcements of technological innovations or new products by us or our competitors, changes in financial estimates and recommendations by securities analysts, the operating and stock performance of other companies that investors may deem comparable to us, and news reports relating to trends in our markets. These fluctuations, as well as general economic and market conditions, may adversely affect the market price for our common stock.

DILUTION

Our net tangible book value as of January 31, 2018 was approximately \$32.3 million, or approximately \$4.71 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of January 31, 2018.

After giving effect to our sale of shares of our common stock in this offering at the public offering price of \$ _____ per share, and after deducting the underwriting discount and commissions and the estimated offering expenses payable by us, our as adjusted net tangible book value as of January 31, 2018 would have been approximately \$ _____, or \$ _____ per share of common stock. This represents an immediate increase in net tangible book value of \$ _____ per share to existing stockholders and immediate dilution in net tangible book value of \$ _____ per share to investors participating in this offering at the public offering price. The following table illustrates this dilution on a per share basis:

Public offering price for one share of common stock in this offering	\$ _____
Net tangible book value per share as of January 31, 2018	\$4.71
Increase in net tangible book value per share attributable to investors participating in this offering	_____
As adjusted net tangible book value per share immediately after this offering	_____
Dilution per share to investors participating in this offering	\$ _____

If the underwriters exercise in full their option to purchase an additional shares of common stock at the public offering price of \$ _____ per share, the as adjusted net tangible book value after this offering would be approximately \$ _____ per share, representing an increase in net tangible book value of approximately \$ _____ per share to existing stockholders and immediate dilution in net tangible book value of approximately \$ _____ per share to investors participating in this offering at the public offering price.

The above discussion and table are based on 6,858,171 shares of common stock outstanding as of January 31, 2018, and excludes as of such date:

- 985,741 shares of common stock issuable upon the exercise of stock options outstanding at a weighted average exercise price of \$13.92 per share, and 190,886 additional shares of common stock reserved for issuance under our stock option plan;
- 994,767 shares of common stock issuable upon the exercise of warrants outstanding at a weighted exercise price of \$7.19 per share;
- 36,648 shares of common stock issuable upon conversion of redeemable convertible notes at a rate of \$137.85 per share; and
- 716,000 shares of common stock issuable upon conversion of 3,580 shares of Series A Convertible Preferred Shares outstanding.

UNDERWRITING

Under the terms and subject to the conditions set forth in an underwriting agreement, the underwriters named below, for whom JonesTrading Institutional Services LLC is acting as representative, have agreed, severally and not jointly, to purchase, and we have agreed to sell to them, the number of shares of common stock indicated below:

	Number of Shares of Common Stock
JonesTrading Institutional Services LLC	
Ladenburg Thalmann & Co. Inc.	
LifeSci Capital LLC	
Total	

The underwriting agreement provides that the obligations of the several underwriters are subject to various conditions, including the approval of certain legal matters by their counsel. The underwriters are obligated to take and pay for all the shares of common stock offered by this prospectus supplement if any such shares are purchased. However, the underwriters are not required to take or pay for the shares of common stock covered by the underwriters' option to purchase additional securities described below.

The underwriters expect to deliver the shares of common stock to purchasers on or about February , 2018.

The public offering price was determined in negotiations between the underwriter and us based on the closing price per share of our common stock on the Nasdaq Capital Market on February , 2018, which was \$ per share. The following table shows the per share and total public offering price, underwriting discounts and commissions, and proceeds before expenses to us.

	Per common share	Total
Public offering price of common stock	\$	\$
Underwriting discounts and commissions	\$	\$
Proceeds before expenses, to us	\$	\$

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately \$. We have agreed to pay the expenses of the underwriters in connection with the offering, including filing fees, investor presentation expenses and underwriters' counsel legal fees, up to an aggregate maximum amount of \$50,000.

The underwriters have informed us that they do not intend to confirm sales to any discretionary accounts over which they exercise discretionary authority.

The underwriters will require all our directors and officers to agree not to offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exchangeable or exercisable for shares of common stock, or, collectively, the Lock-Up Securities, without the prior written consent of the representative for a period of 45 days from the date of this prospectus supplement. These restrictions are subject to certain exceptions, including if the transfer (i) does not trigger any filing or reporting requirement or obligation or result in any other voluntary or mandatory public disclosure, including but not limited to Form 4 of Section 16 of the Securities Exchange Act of 1934, as amended, (ii) is a gift, (iii) is by process of will or intestacy, (iv) is a distribution to partners, members or shareholders of the undersigned, (v) is to a settlor of a trust or to the estate of a beneficiary of a trust, (vi) relates to the transfer of shares of common stock to the Company pursuant to an agreement under which the Company has the option to repurchase shares or has a right of first refusal, (vii) is pursuant to a pre-existing trading plan, (viii) is in satisfaction of tax withholding obligations, (ix) is pursuant to a liquidation, tender offer, merger, consolidation, binding share exchange or other similar transaction involving a change in control of the Company, (x) is pursuant to a court order or settlement agreement related to the distribution of assets in connection with the dissolution of marriage or civil union, or (xi) relates to the exercise of any option, warrant or other right to acquire shares of common stock, the settlement of any stock-settled stock appreciation rights, restricted stock or restricted stock units, including through a "net" or cashless exercise, granted and outstanding as of the date of the lock-up agreement or at the closing date of the offering contemplated by this prospectus supplement, or the conversion of any convertible security of the

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Company in accordance with its terms; provided, however, that it shall be a condition to the transfer pursuant to clauses (i), (ii), (iii), (iv), (v), (ix) and (x) that the transferee execute an agreement stating that the transferee is receiving and holding the securities subject to the provisions of such lock-up agreement.

We have agreed, subject to certain exceptions, that from the date of this prospectus supplement to, but not including, April 1, 2018, we will not, without the prior written consent of the representative, directly or indirectly offer, pledge, sale, contract to sell, short sale or otherwise dispose of any shares of common stock or other securities convertible into or exchangeable or exercisable for shares of common stock or derivative of common stock. These restrictions do not apply among others to (i) the sale of shares of common stock to the underwriters; (ii) the issuance of shares of common stock upon exercise, conversion or exchange of options or upon the conversion or exchange of other securities; (iii) the filing of one or more registration statements registering the secondary sale of shares of common stock or securities convertible into shares of common stock; (iv) the sale of shares of common stock, options to purchase shares of common stock, restricted stock units or similar equity securities pursuant to any stock option, stock bonus or other stock plan or arrangement described in the accompanying prospectus; (v) the issuance of shares of common stock, options, restricted stock units or similar equity securities to our directors as compensation for their services as directors of the company; (vi) agreements providing for the issuance of shares of common stock or any securities convertible into or exchangeable or exercisable for shares of common stock in connection with the acquisition by the Company or any of its subsidiaries of the securities, business, property or other assets of another person or entity (including pursuant to an employee benefit plan assumed by the Company in connection with such acquisition), and the issuance of any such securities pursuant to any such agreement, and (vii) agreements providing for the issuance of shares of common stock or any security convertible into or exercisable for shares of common stock in connection with joint ventures, commercial relationships, debt financing or other strategic transactions, and issuance of any such securities pursuant to any such agreements; provided that in the case of clauses (vi) and (vii), the aggregate number of shares of common stock that the Company may sell or issue or agree to sell or issue pursuant to clauses (vi) and (vii), taken together, shall not exceed 5.0% of the total number of shares of common stock issued and outstanding immediately subsequent to the completion of the transactions contemplated by this prospectus supplement.

The underwriters have advised us that they propose to offer the shares of common stock to the public at the offering price set forth on the cover page of this prospectus supplement and to certain dealers at that price less a concession not in excess of \$ _____ per share of common stock. After the offering, the offering price, concession and reallowance to dealers may be reduced by the underwriters. In order to facilitate the offering of the shares of common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the shares of common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short position is no greater than the number of shares available for purchase by the underwriters under the option to purchase additional securities. The underwriters can close out a covered short sale by exercising the option to purchase additional securities or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under the option to purchase additional securities. The underwriters may also sell shares in excess of the option to purchase additional securities, creating a naked short position. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares of common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the shares of common stock. These activities may raise or maintain the market price of the shares of common stock above independent market levels or prevent or retard a decline in the market price of the shares of common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act. The underwriters and their respective affiliates are full-service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriters and certain of their affiliates have provided from time to time, and may provide in the future, investment and commercial banking and financial advisory services to us and our affiliates in the ordinary course of business, for which they have received and may continue to receive customary fees and commissions. In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of ours. The underwriters and their respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

LEGAL MATTERS

The validity of the securities being offered by this prospectus will be passed upon by Morrison & Foerster LLP, Palo Alto, California. The underwriters being represented in connection with this offering by Duane Morris LLP, Newark, New Jersey.

EXPERTS

The consolidated balance sheets of Catalyst Biosciences, Inc. as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive loss, convertible preferred stock and stockholders' equity (deficit), and cash flows for each of the years then ended, have been audited by EisnerAmper LLP, independent registered public accounting firm, as stated in their report which is incorporated by reference herein. Such financial statements have been incorporated by reference herein in reliance on the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying base prospectus are part of a registration statement on Form S-3 that we filed with the SEC under the Securities Act. This prospectus supplement and the accompanying base prospectus do not contain all of the information included in the registration statement. We have omitted certain parts of the registration statement in accordance with the rules and regulations of the SEC. For further information, we refer you to the registration statement, including its exhibits and schedules. Statements contained in this prospectus supplement and the accompanying base prospectus about the provisions or contents of any contract, agreement or any other document referred to are not necessarily complete. Please refer to the actual exhibit for a more complete description of the matters involved.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings, including the registration statement and exhibits, are available to the public at the SEC's website at <http://www.sec.gov>. You may also read, without charge, and copy the documents we file, at the SEC's public reference rooms at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for further information on the public reference rooms.

We maintain an Internet site at www.catalystbiosciences.com. Webcasts of presentations we make at certain conferences may also be available on our website from time to time. We have not incorporated by reference into this prospectus supplement or the accompanying base prospectus the information on our website, and you should not consider any of the information posted on or hyper-linked to our website to be a part of this prospectus supplement or the accompanying base prospectus.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to “incorporate by reference” the information we file with the SEC, which means we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and certain information that we will later file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below as well as any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus until we sell all of the securities under this prospectus, except that we do not incorporate any document or portion of a document that is “furnished” to the SEC, but not deemed “filed.” The following documents filed with the SEC are incorporated by reference in this prospectus:

- our Annual Report on Form 10-K for the year ended December 31, 2016 filed with the SEC on March 8, 2017;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017, June 30, 2017 and September 30, 2017 filed with the SEC on May 11, 2017, August 3, 2017, and November 2, 2017, respectively; and
- our Current Reports on Form 8-K filed with the SEC on February 2, 2017, February 10, 2017, April 13, 2017, April 24, 2017, June 16, 2017, July 14, 2017, September 22, 2017, November 1, 2017, November 17, 2017, December 11, 2017 (Item 8.01 only), December 14, 2017, December 18, 2017, December 20, 2017, December 22, 2017, January 4, 2018, January 17, 2018, February 9, 2018, and February 12, 2018.

We also incorporate by reference into this prospectus supplement additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, excluding, in each case, information deemed furnished and not filed until we sell all of the securities we are offering. Any statements contained in a previously filed document incorporated by reference into this prospectus supplement or the accompanying base prospectus is deemed to be modified or superseded for purposes of this prospectus supplement and the accompanying base prospectus to the extent that a statement contained in this prospectus supplement, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

We will provide to you at no cost a copy of any and all of the information incorporated by reference into the registration statement of which this prospectus supplement is a part. You may make a request for copies of this information in writing or by telephone. Requests should be directed to:

Catalyst Biosciences, Inc.
260 Littlefield Ave.
South San Francisco, CA 94080
Attn: Fletcher Payne, Chief Financial Officer
(650) 871-0761

\$150,000,000



**Common Stock
Preferred Stock
Debt Securities
Warrants
Units**

From time to time, we may offer and sell, in one or more offerings, in amounts, at prices and on terms determined at the time of any such offering, common stock, preferred stock, debt securities, warrants, either individually or in units, with a total value of up to \$150,000,000. We refer to our common stock, preferred stock, debt securities, warrants and units in this prospectus as “securities.”

Our common stock trades on The NASDAQ Capital Market under the symbol “CBIO.” On January 19, 2018, the last reported sale price of the common stock on The NASDAQ Capital Market was \$19.49 per share.

We will provide specific terms of these securities in supplements to this prospectus. The prospectus supplement will also describe the specific manner in which we will offer the securities and may also supplement, update or amend information contained in this document. You should read this prospectus and any supplement carefully before you purchase any of our securities.

We may offer the securities in amounts, at prices and on terms determined at the time of offering. We may sell the securities directly to you, through agents we select or through underwriters and dealers we select. If we use agents, underwriters or dealers to sell the securities, we will name them and describe their compensation in a prospectus supplement. You can find additional information about our plan of distribution for the securities under the heading “Plan of Distribution” in this prospectus. We will also describe the plan of distribution for any particular offering of these securities in the prospectus supplement. This prospectus may not be used to offer and sell securities unless accompanied by a prospectus supplement.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD CAREFULLY READ AND CONSIDER THE RISK FACTORS DESCRIBED IN THIS PROSPECTUS, ANY ACCOMPANYING PROSPECTUS SUPPLEMENT AND IN THE DOCUMENTS INCORPORATED BY REFERENCE INTO THIS PROSPECTUS. SEE “[RISK FACTORS](#)” BEGINNING ON PAGE 4.

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.

The date of this prospectus is February 6, 2018

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You should rely only on the information contained or incorporated by reference in this prospectus, in any accompanying prospectus supplement or in any free writing prospectus filed by us with the Securities and Exchange Commission (the “SEC”). We have 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. You should assume that the information appearing in this prospectus and any prospectus supplement or in any such free writing prospectus is accurate as of the dates on their covers. Our business, financial condition, results of operations and prospects may have changed since those dates. Any information contained on or accessible through our Internet site is not incorporated herein and does not constitute part of this prospectus.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, using a “shelf” registration process. Under this shelf registration process, we may, from time to time, issue and sell to the public any part of the securities described in this prospectus in one or more offerings up to a total dollar amount of \$150,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell the securities, we will provide a prospectus supplement containing specific information about the terms of that offering. The prospectus supplement may also add, update or change information in this prospectus or in documents incorporated by reference in this prospectus. To the extent that any statement that we make in a prospectus supplement is inconsistent with statements made in this prospectus or in documents incorporated by reference in this prospectus, the statements made or incorporated by reference in this prospectus will be deemed modified or superseded by those made in the prospectus supplement. You should carefully read both this prospectus and any prospectus supplement together with the additional information described under the heading “Where You Can Find More Information” before buying any securities offered in this offering.

THIS PROSPECTUS MAY NOT BE USED TO OFFER AND SELL SECURITIES UNLESS IT IS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

For purposes of this prospectus, references to the terms “Catalyst,” “the Company,” “we,” “us” and “our” refer to Catalyst Biosciences, Inc., unless the context otherwise requires.

The registration statement containing this prospectus, including exhibits to the registration statement, provides additional information about us and the securities offered under this prospectus. The registration statement can be read at the SEC’s website or at the SEC offices mentioned under the heading “Where You Can Find More Information.”

OUR COMPANY

We are a clinical-stage biopharmaceutical company focused on developing novel medicines to address serious medical conditions for individuals who need new or better treatment options. We used a scientific approach to engineer several protease-based therapeutic candidates. We are focusing our product development efforts in the field of hemostasis (the process that regulates bleeding) and have a mission to develop valuable therapies for individuals with hemophilia.

We are applying our substantial expertise in protease engineering and our proprietary product discovery platform to create, engineer and characterize protease drug candidates. Proteases regulate several complex biological cascades, or sequenced biochemical reactions, including the coagulation cascade (a mechanism of blood clotting) in hemophilia and non-hemophilia settings and the complement cascade that causes inflammation and tissue damage in certain diseases. Our protease expertise allowed us to improve the biochemical and pharmacological properties of currently marketed hemophilia protease drugs, specifically Factors VIIa, IX and Xa and to create completely novel proteases that cleave disease-causing proteins, specifically complement Factor 3 (C3), for the potential treatment of dry age-related macular degeneration, a condition that can cause visual impairment or blindness for which there are no approved treatments (Dry AMD), and renal delayed graft function (DGF).

Our most advanced program is an improved next-generation coagulation Factor VIIa variant, marzeptacog alfa (activated) (formerly CB 813d), that has successfully completed an intravenous Phase 1 clinical trial evaluating the pharmacokinetics, pharmacodynamics and coagulation activity in individuals with severe hemophilia A and B with and without an inhibitor and has entered into the Phase 2 part of a Phase 2/3 program.

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In addition to our lead Factor VIIa program, we have two other next-generation coagulation factors, a Factor IX variant, CB 2679d/ISU 304, in a Phase 1/2 clinical study, and a Factor Xa variant, that has reached the advanced lead preclinical stage of development.

Additional details of these programs and related strategic agreements are contained in our Annual Report on Form 10-K for the year ended December 31, 2016.

We commenced operations in 2002 and are a Delaware corporation. On August 20, 2015, we completed our business combination with Targacept, Inc., which was incorporated in 1997. Following the completion of the merger, our business conducted became primarily the business conducted by Old Catalyst. We refer in this prospectus to the business combination as the “merger,” to the Company prior to the merger as “Targacept” and to Catalyst Bio, Inc., our subsidiary, as “Old Catalyst.” Discussions of historical results prior to the completion of the merger reflect solely the results of Old Catalyst and do not include the historical results of Targacept.

Our corporate headquarters are located at South San Francisco, California 94080. Our telephone number is (650) 871-0761, and our website address is www.catalystbiosciences.com. The information on or accessible through our website does not constitute part of this prospectus or any accompanying prospectus supplement and should not be relied upon in connection with making any investment in our securities. We make our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to these reports available free of charge on our website as soon as reasonably practicable after we file these reports with the Commission. Our Code of Ethics can be found on our website.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus and the documents we incorporate by reference in this prospectus contains 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. All statements, other than statements of historical facts, included or incorporated in this prospectus regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. We may, in some cases, use words such as “believe,” “anticipate,” “should,” “intend,” “plan,” “may,” “will,” “seek,” “estimate,” “project,” “expect” and similar expressions, although not all forward-looking statements contain these identifying words. These statements are based on assumptions and assessments made by our management in light of its experience and its perception of historical trends, current conditions, expected future developments and other factors our management believes to be appropriate. These forward-looking statements are subject to a number of risks and uncertainties, including those risks described under “Risk Factors” and in other sections in this prospectus and in our current and periodic reports, and other filings, filed from time to time with the SEC that are incorporated by reference into this prospectus. See “Where You Can Find More Information” below and for information about how to obtain copies of those documents.

Forward-looking statements included or incorporated by reference in this prospectus include, for example, statements about:

- the strategies, prospects, plans, expectations or objectives of management for future operations;
- our focus on specific product candidates;
- the progress, outcomes, scope or duration of the development of product candidates or programs;
- the benefits that may be derived from product candidates or the commercial or market opportunity in any target indication;
- our ability to protect intellectual property rights;
- our anticipated operations, financial position, revenues, costs or expenses, statements regarding future economic conditions or performance;

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- potential regulatory filings for or approval of any of our product candidates;
- the progress of our third-party collaborations, including estimated milestones;
- our intention to seek, and the ability to enter into strategic alliances and collaborations;
- the responsibilities of our collaborators, including the responsibility to make cost reimbursement, milestone, royalty and other payments to us, and our expectations regarding our collaborators' plans with respect to our products;
- our responsibilities to our collaborators, including our responsibilities to conduct research and development, clinical trials and manufacture products;
- the results and timing of clinical trials and the possible commencement of future clinical trials;
- conditions for obtaining regulatory approval of our product candidates;
- submission and timing of applications for regulatory approval;
- the impact of the U.S. Food and Drug Administration (FDA) and other government regulations on our business;
- uncertainties associated with obtaining and protecting patents and other intellectual property rights, as well as avoiding the intellectual property rights of others;
- products and companies that will compete with the products we license to third-party collaborators;
- the possibility we may commercialize our own products and build up our commercial, sales and marketing capabilities and other required infrastructure;
- our employees, including the number of employees and the continued service of key management, technical and scientific personnel;
- our future performance and obligations under agreements we have entered into, such as the definitive agreement related to the termination of the Pfizer Agreement;
- our future performance and our expectations regarding our ability to achieve profitability;
- requirements for us to purchase supplies and raw materials from third parties, and the ability of third parties to provide us with required supplies and raw materials;
- sufficiency of our cash resources, anticipated capital requirements and capital expenditures and our need for additional financing;
- the composition of future revenues;
- accounting policies and estimates, including revenue recognition policies; and
- statements of belief and any statement of assumptions underlying any of the foregoing.

Any such forward-looking statements are not guarantees of future performance and actual results, developments and business decisions may differ from those contemplated by such forward-looking statements. We disclaim any duty to update any forward-looking statements. All such forward looking statements are made only as of the date of the document in which they are contained, based on information available to us as of the date of that document, and we caution you not to place undue reliance on forward- looking statements in light of the risks and uncertainties associated with them. You should also carefully consider other information set forth in reports or other documents that we file with the SEC.

RISK FACTORS

Our business is subject to certain risks and uncertainties. Before you invest in our securities, in addition to the other information, documents or reports incorporated by reference in this prospectus and any prospectus supplement or other offering materials, you should carefully consider the risk factors in this section, the section entitled “Risk Factors” in any prospectus supplement as well as our most recent Annual Report on Form 10-K, and in our Quarterly Reports on Form 10-Q filed subsequent to the Annual Report on Form 10-K, which are incorporated by reference into this prospectus and any prospectus supplement in their entirety, as the same may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. Each of the risks described in these sections and documents could materially and adversely affect our business, financial condition, results of operations and prospects, and could result in a partial or complete loss of your investment.

RATIO OF EARNINGS TO FIXED CHARGES

The following table sets forth the ratio of our earnings or deficiency to fixed charges for the periods set forth below. Our earnings were insufficient to cover fixed charges for the nine-month period ended September 30, 2017 and each of the years ended December 31, 2015 and 2016. The extent to which earnings were insufficient to cover fixed charges for those periods is also shown in the table. “Earnings” consist of net income (loss) from operations before income taxes less (plus) fixed charges. “Fixed charges” consist of interest expense and the estimated portion of operating lease expense that represents interest.

	Nine Months Ended	Fiscal Year Ended December 31,				
	September 30, 2017	2016	2015	2014	2013	2012
Ratio of earnings to fixed charges (1)	—	—	—	—	—	—

- (1) For purposes of computing the ratio of earnings to fixed charges, earnings consist of net income (loss) plus fixed charges. Fixed charges consist of interest expense, amortization of issuance costs and discount or premium related to indebtedness, whether expensed or capitalized, and that portion of rental payments under operating leases we believe to be representative of interest. Earnings were insufficient to cover fixed charges by \$15.8 million for the nine months ended September 31, 2017 and \$16.9 million, \$14.8 million, \$6.6 million, \$10.0 million and \$19.0 million for the years ended December 31, 2016, 2015, 2014, 2013 and 2012, respectively.

USE OF PROCEEDS

Unless otherwise indicated in a prospectus supplement, the net proceeds from the sale of securities offered by this prospectus will be used for general corporate purposes, which may include clinical trials, research and development activities, capital expenditures, selling, general and administrative costs, facilities expansion, and to meet working capital needs. We expect from time to time to evaluate the acquisition of businesses, products and technologies for which a portion of the net proceeds may be used, although we currently are not planning or negotiating any such transactions. Pending such uses, we may invest the net proceeds in investment grade interest-bearing securities.

The amounts actually expended for each purpose may vary significantly depending upon numerous factors, including the amount and timing of the proceeds from this offering and progress with the commercial development of our products as well as our clinical development programs. Expenditures will also depend upon the establishment of collaborative arrangements with other companies, the availability of additional financing and other factors. Investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of securities.

DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus. It may not contain all the information that is important to you. For the complete terms of our common stock and preferred stock, please refer to our Fourth Amended and Restated Certificate of Incorporation, as amended (the “restated certificate of incorporation”) and our amended and restated bylaws, which are incorporated by reference into the registration statement which includes this prospectus. The Delaware General Corporation Law (“DGCL”) may also affect the terms of these securities. While the terms we have summarized below will apply generally to any future common stock and preferred stock that we may offer, we will describe the particular terms of these securities in more detail in the applicable prospectus supplement. If we so indicate in a prospectus supplement, the terms of any security we offer under that prospectus supplement may differ from the terms we describe below.

Common Stock

Under our restated certificate of incorporation, we have authority to issue 100,000,000 shares of our common stock, par value \$0.001 per share. As of January 19, 2018, 6,366,604 shares of our common stock were issued and outstanding. All shares of our common stock will, when issued, be duly authorized, fully paid and nonassessable.

Dividends. Subject to preferential dividend rights of any other class or series of stock, the holders of shares of our common stock are entitled to receive dividends, including dividends of our stock, as and when declared by our board of directors, subject to any limitations imposed by law and to the rights of the holders, if any, of our preferred stock. We have never paid cash dividends on our common stock, except with respect to a cash dividend paid in connection with the closing of the merger. We do not anticipate paying periodic cash dividends on our common stock for the foreseeable future. Any future determination about the payment of dividends will be made at the discretion of our board of directors and will depend upon our earnings, if any, capital requirements, operating and financial conditions and on such other factors as the board of directors deems relevant.

Liquidation. In the event we are liquidated, dissolved or our affairs are wound up, after we pay or make adequate provision for all of our known debts and liabilities, each holder of our common stock will be entitled to share ratably in all assets that remain, subject to any rights that are granted to the holders of any class or series of preferred stock.

Voting Rights. For all matters submitted to a vote of stockholders, each holder of our common stock is entitled to one vote for each share registered in his or her name. Except as may be required by law and in connection with some significant actions, such as mergers, consolidations, or amendments to our restated certificate of incorporation that affect the rights of stockholders, holders of our common stock vote together as a single class. There is no cumulative voting in the election of our directors, which means that, subject to any rights to elect directors that are granted to the holders of any class or series of preferred stock, a plurality of the votes cast at a meeting of stockholders at which a quorum is present is sufficient to elect a director.

Other Rights and Restrictions. Subject to the preferential rights of any other class or series of stock, all shares of our common stock have equal dividend, distribution, liquidation and other rights, and have no preference, appraisal or exchange rights, except for any appraisal rights provided by Delaware law. Furthermore, holders of our common stock have no conversion, sinking fund or redemption rights, or preemptive rights to subscribe for any of our securities. Our restated certificate of incorporation and our bylaws do not restrict the ability of a holder of our common stock to transfer his or her shares of our common stock.

The rights, powers, preferences and privileges of holders of our common stock are subject to, and may be adversely affected by, the rights of holders of shares of any series of preferred stock which we may designate and issue in the future.

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Listing. Our common stock is listed on the NASDAQ Capital Market under the symbol “CBIO.”

Transfer Agent and Registrar. The transfer agent for our common stock is American Stock Transfer & Trust Company, LLC. Its address is 6201 15th Avenue, Brooklyn, NY 11219.

Preferred Stock

Under our restated certificate of incorporation, we have authority, subject to any limitations prescribed by law and without further stockholder approval, to issue from time to time up to 5,000,000 shares of preferred stock, par value \$0.001 per share, in one or more series. As of January 19, 2018, 13,350 shares of preferred stock were designated as Series A Convertible Preferred Shares, 3,680 of which were issued and outstanding, as described in greater detail below under “Series A Convertible Preferred Shares.”

Pursuant to our restated certificate of incorporation, we are authorized to issue “blank check” preferred stock, which may be issued from time to time in one or more series upon authorization by our board of directors. Our board of directors, without further approval of the stockholders, is authorized to fix the designation, powers, preferences, relative, participating optional or other special rights, and any qualifications, limitations and restrictions applicable to each series of the preferred stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes could, among other things, adversely affect the voting power or rights of the holders of our common stock and, under certain circumstances, make it more difficult for a third party to gain control of us, discourage bids for our common stock at a premium or otherwise adversely affect the market price of the common stock.

The preferred stock will have the terms described below unless otherwise provided in the prospectus supplement relating to a particular series of the preferred stock. You should read the prospectus supplement relating to the particular series of the preferred stock being offered for specific terms, including:

- the designation and stated value per share of the preferred stock and the number of shares offered;
- the amount of liquidation preference per share;
- the price at which the preferred stock will be issued;
- the dividend rate, or method of calculation of any dividend, the dates on which dividends will be payable, whether dividends will be cumulative or noncumulative and, if cumulative, the dates from which dividends will accumulate;
- any redemption or sinking fund provisions;
- if other than the currency of the United States, the currency or currencies, including composite currencies, in which the preferred stock is denominated and/or in which payments will or may be payable;
- any conversion provisions; and
- any other rights, preferences, privileges, qualifications, limitations and restrictions on the preferred stock.

The preferred stock will, when issued, be duly authorized, fully paid and nonassessable. Unless otherwise specified in the prospectus supplement, each series of the preferred stock will rank equally as to dividends and liquidation rights in all respects with any other series of preferred stock. The rights of holders of shares of each series of preferred stock will be subordinate to those of our general creditors.

Rank. Unless otherwise specified in the prospectus supplement, the preferred stock will, with respect to dividend rights and rights upon our liquidation, dissolution or winding up of our affairs, rank:

- senior to all classes or series of our common stock and to all equity securities ranking junior to such preferred stock with respect to dividend rights or rights upon our liquidation, dissolution or winding up of our affairs;

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- on a parity with all equity securities issued by us, the terms of which specifically provide that such equity securities rank on a parity with the preferred stock with respect to dividend rights or rights upon our liquidation, dissolution or winding up of our affairs; and
- junior to all equity securities issued by us, the terms of which specifically provide that such equity securities rank senior to the preferred stock with respect to dividend rights or rights upon our liquidation, dissolution or winding up of our affairs.

The term “equity securities” does not include convertible debt securities.

Dividends. Holders of the preferred stock of each series will be entitled to receive, when, as and if declared by our board of directors, cash dividends at such rates and on such dates described in the prospectus supplement. Different series of preferred stock may be entitled to dividends at different rates or based on different methods of calculation. The dividend rate may be fixed or variable or both. Dividends will be payable to the holders of record as they appear on our stock books on record dates fixed by our board of directors, as specified in the applicable prospectus supplement.

Dividends on any series of the preferred stock may be cumulative or noncumulative, as described in the applicable prospectus supplement. If our board of directors does not declare a dividend payable on a dividend payment date on any series of noncumulative preferred stock, then the holders of that noncumulative preferred stock will have no right to receive a dividend for that dividend payment date, and we will have no obligation to pay the dividend accrued for that period, whether or not dividends on that series are declared payable on any future dividend payment dates. Dividends on any series of cumulative preferred stock will accrue from the date we initially issue shares of such series or such other date specified in the applicable prospectus supplement.

Liquidation Preference. Upon any voluntary or involuntary liquidation, dissolution or winding up of our affairs, before we make any distribution or payment to the holders of any common stock or any other class or series of our capital stock ranking junior to the preferred stock in the distribution of assets upon any liquidation, dissolution or winding up of our affairs, the holders of each series of preferred stock shall be entitled to receive out of assets legally available for distribution to stockholders, liquidating distributions in the amount of the liquidation preference per share set forth in the applicable prospectus supplement, plus any accrued and unpaid dividends thereon. Such dividends will not include any accumulation in respect of unpaid noncumulative dividends for prior dividend periods. Unless otherwise specified in the prospectus supplement, after payment of the full amount of their liquidating distributions, the holders of preferred stock will have no right or claim to any of our remaining assets. Upon any such voluntary or involuntary liquidation, dissolution or winding up, if our available assets are insufficient to pay the amount of the liquidating distributions on all outstanding preferred stock and the corresponding amounts payable on all other classes or series of our capital stock ranking on parity with the preferred stock and all other such classes or series of shares of capital stock ranking on parity with the preferred stock in the distribution of assets, then the holders of the preferred stock and all other such classes or series of capital stock will share ratably in any such distribution of assets in proportion to the full liquidating distributions to which they would otherwise be entitled.

Redemption. If so provided in the applicable prospectus supplement, the preferred stock will be subject to mandatory redemption or redemption at our option, as a whole or in part, in each case upon the terms, at the times and at the redemption prices set forth in such prospectus supplement.

Voting Rights. Holders of preferred stock will have voting rights as required by law or as indicated in the applicable prospectus supplement.

Conversion Rights. The terms and conditions, if any, upon which any series of preferred stock is convertible into common stock will be set forth in the applicable prospectus supplement relating thereto. Such terms will include the number of shares of common stock into which the shares of preferred stock are convertible, the conversion price, rate or manner of calculation thereof, the conversion period, provisions as to whether

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conversion will be at our option or at the option of the holders of the preferred stock, the events requiring an adjustment of the conversion price and provisions affecting conversion in the event of the redemption.

Transfer Agent and Registrar. Any transfer agent and registrar for the preferred stock will be set forth in the applicable prospectus supplement.

Series A Convertible Preferred Stock

As of January 19, 2018, 13,350 shares of preferred stock were designated as Series A Convertible Preferred Shares, 3,680 of which were issued and outstanding.

Liquidation Preference. In the event of a liquidation, the holders of Series A Convertible Preferred Stock will be entitled to participate on an as-converted-to-common-stock basis with holders of the common stock in any distribution of assets of the Company to the holders of the common stock.

Dividends. The Series A Certificate of Designation provides, among other things, that we shall not pay any dividends on shares of common stock (other than dividends in the form of common stock) unless and until such time as we pay dividends on each share of Series A Convertible Preferred Stock on an as-converted basis. Other than as set forth in the previous sentence, the Series A Certificate of Designation provides that no other dividends shall be paid on shares of Series A Convertible Preferred Stock and that we shall pay no dividends (other than dividends in the form of common stock) on shares of common stock unless we simultaneously comply with the previous sentence. The Series A Certificate of Designation does not provide for any restriction on the repurchase of Series A Convertible Preferred Stock by us while there is any arrearage in the payment of dividends on the Series A Convertible Preferred Stock. There are no sinking fund provisions applicable to the Series A Convertible Preferred Stock.

Voting Rights. With certain exceptions, as described in the Series A Certificate of Designation, the Series A Convertible Preferred Stock has no voting rights. However, as long as any shares of Series A Convertible Preferred Stock remain outstanding, the Series A Certificate of Designation provides that we shall not, without the affirmative vote of holders of a majority of the then-outstanding shares of Series A Convertible Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Series A Convertible Preferred Stock or alter or amend the Series A Certificate of Designation, (b) increase the number of authorized shares of Series A Convertible Preferred Stock or (c) effect a stock split or reverse stock split of the Series A Convertible Preferred Stock or any like event.

Conversion. Each share of Series A Convertible Preferred Stock is convertible at any time at the holder's option into a number of shares of Common Stock equal to \$1,000.00 per share divided by the Conversion Price. The "Conversion Price" is initially \$5.00, subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions as specified in the Certificate of Designation. Notwithstanding the foregoing, the Series A Certificate of Designation provides further that we shall not effect any conversion of the Series A Convertible Preferred Stock, with certain exceptions, to the extent that, after giving effect to an attempted conversion, the holder of Series A Convertible Preferred Stock (together with such holder's affiliates, and any persons acting as a group together with such holder or any of such holder's affiliates) would beneficially own a number of shares of Common Stock in excess of 4.99% (or, at the election of the purchaser, 9.99%) of the shares of our common stock then outstanding after giving effect to such exercise (the "Preferred Stock Beneficial Ownership Limitation").

Call Right. Additionally, subject to certain exceptions, at any time prior to the three year anniversary of the issuance of the Series A Convertible Preferred Stock, subject to the Preferred Stock Beneficial Ownership Limitation, we will have the right to cause each holder of the Series A Convertible Preferred Stock to convert all or part of such holder's Series A Convertible Preferred Stock in the event that (i) the volume weighted average price of our common stock for 30 consecutive trading days (the "Measurement Period") exceeds 300% of the conversion price of the Series A Convertible Preferred Stock issued (subject to adjustment for forward and

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reverse stock splits, recapitalizations, stock dividends and similar transactions), (ii) the average daily trading volume for such Measurement Period exceeds \$500,000 per trading day and (iii) the holder is not in possession of any information that constitutes or might constitute, material non-public information which was provided by the Company and subject to the Preferred Beneficial Ownership Limitation. Our right to cause each holder of the Series A Convertible Preferred Stock to convert all or part of such holder's Series A Convertible Preferred Stock shall be exercised ratably among the holders of the then outstanding Series A Convertible Preferred Stock.

Listing. We have not applied for listing of the Series A Convertible Preferred Stock on any securities exchange or other trading system.

Transfer Agent. The transfer agent for our Series A Convertible Preferred Stock is American Stock Transfer & Trust Company, LLC.

Certain Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may issue these additional shares for a variety of corporate purposes, including future public or private offerings to raise additional capital or to facilitate corporate acquisitions or for payment as a dividend on our capital stock. The existence of unissued and unreserved preferred stock may enable our board of directors to issue shares of preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management. In addition, if we issue preferred stock, the issuance could adversely affect the voting power of holders of common stock and the likelihood that holders of common stock will receive dividend payments or payments upon liquidation.

ADDITIONAL INFORMATION CONCERNING OUR CAPITAL STOCK

Anti-Takeover Effects of Provisions of Our Charter Documents

Our restated certificate of incorporation provides for our board of directors to be divided into three classes serving staggered terms. Approximately one-third of our board of directors will be elected each year. The provision for a classified board could prevent a party who acquires control of a majority of the outstanding voting stock from obtaining control of the board of directors until the second annual stockholders meeting following the date the acquirer obtains the controlling stock interest. The classified board provision could discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of Catalyst and could increase the likelihood that incumbent directors will retain their positions. Our restated certificate of incorporation provides that directors may be removed with or without cause by the affirmative vote of the holders of at least 66 2/3% of the voting power of all outstanding stock.

Our restated certificate of incorporation requires that certain amendments to the restated certificate of incorporation and amendments by the stockholders of our bylaws require the affirmative vote of at least 66 2/3% of the voting power of all outstanding stock. These provisions could discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of the Company and could delay changes in management.

Our amended and restated bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual stockholders meeting, including proposed nominations of persons for election to our board of directors. At an annual stockholders meeting, stockholders may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors. Stockholders may also consider a proposal or nomination by a person who was a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given to the Secretary of the Company timely written notice, in proper form, of his or her intention to bring that business before the annual stockholders meeting. The amended and restated bylaws do not give our board of directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a

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special or annual meeting of the stockholders. However our bylaws may have the effect of precluding the conduct of business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of the Company.

Our amended and restated bylaws provide that only our board of directors, the chairperson of the board, the President or the Chief Executive Officer may call a special meeting of stockholders. Because our stockholders do not have the right to call a special meeting, a stockholder could not force stockholder consideration of a proposal over the opposition of our board of directors by calling a special meeting of stockholders prior to such time as a majority of our board of directors, the chairperson of the board, the President or the Chief Executive Officer believed the matter should be considered or until the next annual meeting provided that the requestor met the notice requirements. The restriction on the ability of stockholders to call a special meeting means that a proposal to replace the board also could be delayed until the next annual stockholders meeting.

Our restated certificate of incorporation does not allow stockholders to act by written consent without a meeting. Without the availability of stockholder's actions by written consent, a holder controlling a majority of our capital stock would not be able to amend our bylaws or remove directors without holding a stockholders' meeting.

Anti-Takeover Effects of Provisions of Delaware Law

We are subject to the provisions of Section 203 of the DGCL, or Section 203. Under Section 203, we would generally be prohibited from engaging in any business combination with any interested stockholder for a period of three years following the time that this stockholder became an interested stockholder unless:

- prior to this time, our board of directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by persons who are directors and also officers, and 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
- at or subsequent to such time, the business combination is approved by our board of directors and authorized at a special or annual stockholders meeting, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

Under Section 203, a "business combination" includes:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder, subject to limited 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; or
- 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 an 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 such entity or person.

Limitation of Liability and Indemnification

Our restated certificate of incorporation provides that our directors shall not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, except for liability for breach of the director's duty of loyalty to us or our stockholders, for acts or omissions not in good faith or involving intentional misconduct or a knowing violation of law, for payment of dividends or approval of stock purchases or redemptions that are prohibited by the DGCL, or for any transaction from which the director derived an improper personal benefit. Under the DGCL, our directors have a fiduciary duty to us that is not eliminated by this provision of the restated certificate of incorporation and, in appropriate circumstances, equitable remedies such as injunctive or other forms of non-monetary relief will remain available. This provision also does not affect our directors' responsibilities under any other laws, such as federal securities laws or state or federal environmental laws.

Section 145 of the DGCL empowers a corporation to indemnify its directors and officers against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by them in connection with any action, suit or proceeding brought by third parties by reason of the fact that they were or are directors or officers of the corporation, if they acted in good faith, in a manner they reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe that their conduct was unlawful. The DGCL provides further that the indemnification permitted thereunder shall not be deemed exclusive of any other rights to which the directors and officers may be entitled under the corporation's bylaws, any agreement, a vote of stockholders or otherwise. Our restated certificate of incorporation provides that, to the fullest extent permitted by Section 145 of the DGCL, we shall indemnify any person who is or was a director or officer of us, or is or was serving at our request as a director, officer or trustee of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, against the expenses, liabilities or other matters referred to in or covered by Section 145 of the DGCL. Our amended and restated bylaws provide that we will indemnify any person who was or is a party or threatened to be made a party to any proceeding by reason of the fact that such person is or was a director or officer of us or is or was serving at our request as a director, officer or trustee of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise to the fullest extent permitted by the DGCL.

In addition, we have entered into indemnification agreements with each of our directors and with certain of our executive officers. Pursuant to the indemnification agreements, we has agreed to indemnify and hold harmless these directors and officers to the fullest extent permitted by the DGCL. The agreements generally cover expenses that a director or officer incurs or amounts that a director or officer becomes obligated to pay because of any proceeding to which he or she is made or threatened to be made a party or participant by reason of his or her service as a current or former director, officer, employee or agent of the Company. The agreements also provide for the advancement of expenses to the directors and officers subject to specified conditions. There are certain exceptions to our obligation to indemnify the directors and officers, including any intentional malfeasance or act where the director or officer did not in good faith believe he or she was acting in our best interests, with respect to "short-swing" profit claims under Section 16(b) of the 1934 Act and, with certain exceptions, with respect to proceedings that he or she initiates.

Section 145 of the DGCL also empowers a corporation to purchase insurance for its officers and directors for such liabilities. We maintain liability insurance for our officers and directors.

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the debt securities that we may offer under this prospectus. While the terms we have summarized below will apply generally to any future debt securities we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. The terms of any debt securities we offer under a prospectus supplement may differ from the terms we describe below.

The following summary description, together with the additional information we may include in any applicable prospectus supplements does not purport to be complete and is subject to, and qualified in its entirety by reference to, the form of indenture filed as an exhibit to the registration statement of which this prospectus is part, as it may be supplemented, amended or modified from time to time, as well as the notes and supplemental agreements relating to each series of debt securities that will be incorporated by reference as exhibits to the registration statement that includes this prospectus or as exhibits to a current report on Form 8-K if we offer debt securities.

We will issue senior debt securities under one or more senior indentures that we will enter into with a trustee named in the relevant senior indenture. We will issue subordinated debt securities under one or more subordinated indentures that we will enter into with a trustee named in the relevant subordinated indenture. We have filed a form of indenture as an exhibit to the registration statement of which this prospectus is a part. We use the terms “indenture” and “indentures” in this prospectus to refer to both the senior indenture and the subordinated indenture.

The indentures will be qualified under the Trust Indenture Act of 1939, as amended. We use the term “debenture trustee” to refer to either the trustee under the senior indenture or the trustee under the subordinated indenture, as applicable.

The following summaries of material provisions of the senior debt securities, the subordinated debt securities and the indentures are subject to, and qualified in their entirety by reference to, all the provisions of the indenture applicable to a particular series of debt securities. We urge you to read the applicable prospectus supplements related to the debt securities that we sell under this prospectus, as well as the indenture that would contain the terms of the debt securities. Except as we may otherwise indicate, the terms of the senior indenture and the subordinated indenture would be identical.

General

We will describe in each prospectus supplement the following terms relating to a series of debt securities:

- the title;
- the principal amount being offered, and if a series, the total amount authorized and the total amount outstanding;
- any limit on the amount that may be issued;
- whether or not we will issue the series of debt securities in global form, the terms and who the depositary will be;
- the maturity date;
- whether and under what circumstances, if any, we will pay additional amounts on any debt securities held by a person who is not a U.S. person for tax purposes, and whether we can redeem the debt securities if we have to pay such additional amounts;

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- the annual interest rate, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the dates interest will be payable and the regular record dates for interest payment dates or the method for determining such dates;
- whether or not the debt securities will be secured or unsecured, and the terms of any secured debt;
- the terms of the subordination of any series of subordinated debt;
- the place where payments will be payable;
- restrictions on transfer, sale or other assignment, if any;
- our right, if any, to defer payment of interest and the maximum length of any such deferral period;
- the date, if any, after which, and the price at which, we may, at our option, redeem the series of debt securities pursuant to any optional or provisional redemption provisions and the terms of those redemptions provisions;
- the date, if any, on which, and the price at which we are obligated, pursuant to any mandatory sinking fund or analogous fund provisions or otherwise, to redeem, or at the holder's option to purchase, the series of debt securities and the currency or currency unit in which the debt securities are payable;
- whether the indenture will restrict our ability and/or the ability of our subsidiaries to:
 - incur additional indebtedness;
 - issue additional securities;
 - create liens;
 - pay dividends and make distributions in respect of our capital stock and the capital stock of our subsidiaries;
 - redeem capital stock;
 - place restrictions on our subsidiaries' ability to pay dividends, make distributions or transfer assets;
 - make investments or other restricted payments;
 - sell or otherwise dispose of assets;
 - enter into sale-leaseback transactions;
 - engage in transactions with stockholders and affiliates;
 - issue or sell stock of our subsidiaries; or
 - effect a consolidation or merger;
- whether the indenture will require us to maintain any interest coverage, fixed charge, cash flow-based, asset-based or other financial ratios;
- a discussion of any material or special U.S. federal income tax considerations applicable to the debt securities;
- information describing any book-entry features;
- provisions for a sinking fund purchase or other analogous fund, if any;
- whether the debt securities are to be offered at a price such that they will be deemed to be offered at an "original issue discount" as defined in paragraph (a) of Section 1273 of the Internal Revenue Code;
- the denominations in which we will issue the series of debt securities, if other than denominations of \$1,000 and any integral multiple thereof; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the debt securities, including any additional events of default or covenants provided with respect to the debt securities, and any terms that may be required by us or advisable under applicable laws or regulations.

Conversion or Exchange Rights

We will set forth in the prospectus supplement the terms on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale

Any successor to or acquiror of the indentures must assume all of our obligations under the indentures or the debt securities, as appropriate. If the debt securities are convertible for our other securities or securities of other entities, the person with whom we consolidate or merge or to whom we sell all of our property must make provisions for the conversion of the debt securities into securities that the holders of the debt securities would have received if they had converted the debt securities before the consolidation, merger or sale.

Events of Default Under the Indenture

Unless otherwise provided in any applicable prospectus supplement, documents incorporated by reference or free writing prospectus, the following will be events of default under the indenture with respect to each series of debt securities issued thereunder:

- (a) if we fail to pay interest when due and payable and our failure continues for 30 days, or within such other time period as may be specified in the applicable indenture, and the time for payment has not been extended or deferred;
- (b) if we fail to pay the principal, premium or sinking fund payment, if any, when due and payable and the time for payment has not been extended or delayed;
- (c) if specified events of bankruptcy, insolvency or reorganization occur; and
- (d) if we fail to observe or perform any other covenant contained in the debt securities or the indentures, other than a covenant specifically relating to another series of debt securities, and our failure continues for 60 days, or within such other time period as may be specified in the applicable indenture, after we receive notice from the debenture trustee or holders of at least a majority in principal amount of the outstanding debt securities of an affected series, or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of the applicable series.

If an event of default with respect to debt securities of any series occurs and is continuing, other than an event of default specified in the last bullet point above, the debenture trustee or the holders of at least 25%, or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of that series, by notice to us in writing, and to the debenture trustee if notice is given by such holders, may declare the unpaid principal of, premium, if any, and accrued interest, if any, due and payable immediately. If an event of default specified in the last bullet point above occurs with respect to us, the principal amount of and accrued interest, if any, of each issue of debt securities then outstanding shall be due and payable without any notice or other action on the part of the debenture trustee or any holder.

The holders of a majority in principal amount of the outstanding debt securities of an affected series may waive any default or event of default with respect to the series and its consequences, except defaults or events of default regarding payment of principal, premium, if any, or interest, unless we have cured the default or event of default in accordance with the indenture. Any waiver shall cure the default or event of default.

Subject to the terms of the indentures, if an event of default under an indenture shall occur and be continuing, the debenture trustee will be under no obligation to exercise any of its rights or powers under such

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indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the debenture trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the debenture trustee, or exercising any trust or power conferred on the debenture trustee, with respect to the debt securities of that series, provided that:

- the direction so given by the holder is not in conflict with any law or the applicable indenture; and
- subject to its duties under the Trust Indenture Act of 1939, the debenture trustee need not take any action that might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will only have the right to institute a proceeding under the indentures or to appoint a receiver or trustee, or to seek other remedies if:

- the holder has given written notice to the debenture trustee of a continuing event of default with respect to that series;
- the holders of at least 25% (or, in the case of a default of the type described under subsection (d), above, a majority in principal amount of the outstanding debt securities of an affected series), or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of that series have made written request, and such holders have offered reasonable indemnity to the debenture trustee to institute the proceeding as trustee; and
- the debenture trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series other conflicting directions within 60 days, or within such other time period as may be specified in the applicable indenture, after the notice, request and offer of indemnity.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the debenture trustee regarding our compliance with specified covenants in the indentures.

Modification of Indenture; Waiver

We and the debenture trustee may change an indenture without the consent of any holders with respect to specific matters:

- to evidence the succession of another corporation to us and the assumption by any such successor of our covenants in such indenture and in the debt securities issued thereunder;
- to add to our covenants or to surrender any right or power conferred on us pursuant to the indenture;
- to establish the form and terms of debt securities issued thereunder;
- to evidence and provide for a successor trustee under such indenture with respect to one or more series of debt securities issued thereunder or to provide for or facilitate the administration of the trusts under such indenture by more than one trustee;
- to cure any ambiguity, to correct or supplement any provision in the indenture that may be defective or inconsistent with any other provision of the indenture or to make any other provisions with respect to matters or questions arising under such indenture; provided that no such action adversely affects the interests of the holders of any series of debt securities issued thereunder in any material respect;
- to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms or purposes of issue, authentication and delivery of securities under the indenture;

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- to add any additional events of default with respect to all or any series of debt securities;
- to supplement any of the provisions of the indenture as may be necessary to permit or facilitate the defeasance and discharge of any series of debt securities, provided that such action does not adversely affect the interests of any holder of an outstanding debt security of such series or any other security in any material respect;
- to make provisions with respect to the conversion or exchange rights of holders of debt securities of any series;
- to pledge to the trustee as security for the debt securities of any series any property or assets;
- to add guarantees in respect of the debt securities of one or more series;
- to change or eliminate any of the provisions of the indenture, provided that any such change or elimination becomes effective only when there is no security of any series outstanding created prior to the execution of such supplemental indenture which is entitled to the benefit of such provision;
- to provide for certificated securities in addition to or in place of global securities;
- to qualify such indenture under the Trust Indenture Act of 1939, as amended;
- with respect to the debt securities of any series, to conform the text of the indenture or the debt securities of such series to any provision of the description thereof in our offering memorandum or prospectus relating to the initial offering of such debt securities, to the extent that such provision, in our good faith judgment, was intended to be a verbatim recitation of a provision of the indenture or such securities; or
- to make any other change that does not adversely affect the rights of holders of any series of debt securities issued thereunder in any material respect.

In addition, under the indentures, the rights of holders of a series of debt securities may be changed by us and the debenture trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series that is affected. However, we and the debenture trustee may only make the following changes with the consent of each holder of any outstanding debt securities affected:

- extending the fixed maturity of the series of debt securities; or
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or reducing any premium payable upon the redemption of any debt securities; or
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment, supplement, modification or waiver; or
- make any change that adversely affects the right to convert or exchange any security into or for common stock or other securities, cash or other property in accordance with the terms of the applicable debt security.

Each indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities, except for specified obligations, including obligations to:

- register the transfer or exchange of debt securities of the series;
- replace stolen, lost or mutilated debt securities of the series;
- maintain paying agencies;
- hold monies for payment in trust;
- recover excess money held by the debenture trustee;

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- compensate and indemnify the debenture trustee; and
- appoint any successor trustee.

In order to exercise our rights to be discharged, we must deposit with the debenture trustee money or government obligations sufficient to pay all the principal of, any premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange and Transfer

Each debt security will be represented by either one or more global securities registered in the name of The Depository Trust Company, as depository, or a nominee (which we refer to, in the case of any debt security represented by a global debt security, as a “book-entry debt security”), or a certificate issued in definitive registered form (which we refer to, in the case of any debt security represented by a certificated security, as a “certificated debt security”) as set forth in the applicable prospectus supplement. Except as set forth in the applicable prospectus supplement, book-entry debt securities will not be issuable in certificated form.

You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. No service charge will be made for any registration of transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover all taxes, assessments or other governmental charges that may be imposed in connection with a transfer or exchange.

You may effect the transfer of certificated debt securities and the right to receive the principal of, and any premium and interest on, certificated debt securities only by surrendering the certificate representing those certificated debt securities and either execution by us, and authentication and delivery by the debenture trustee, of the certificate to the new holder or execution by us, and authentication and delivery by the debenture trustee, of a new certificate to the new holder.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days, or within such other time period as may be specified in the applicable indenture, before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Repurchases on the Open Market

We, or an affiliate of ours, may at any time or from time to time repurchase any debt security in the open market or otherwise. Such debt securities may, at our option (or our affiliate’s option), be held, resold or surrendered to the trustee for cancellation.

Discharge of Debt Securities

When all outstanding debt securities of any series will become due and payable within one year of their stated maturity and we have deposited with the debenture trustee cash sufficient to pay and discharge all outstanding debt securities of such series on the date of their stated maturity, then we may discharge our obligations under the relevant indenture with respect to such debt securities while they remain outstanding.

Information Concerning the Debenture Trustee

The debenture trustee, other than during the occurrence and continuance of an event of default under an indenture, undertakes to perform only those duties as are specifically set forth in the applicable indenture. Upon

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an event of default under an indenture, the debenture trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the debenture trustee is under no obligation to exercise any of the powers given him or her by the indentures at the request of any holder of debt securities unless he or she is offered reasonable security and indemnity against the costs, expenses and liabilities that he or she might incur.

Payment and Paying Agents

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

We will pay principal of and any premium and interest on the debt securities of a particular series at the office of the paying agents designated by us, except that unless we otherwise indicate in the applicable prospectus supplement, we will make interest payments by check that we will mail to the holder or by wire transfer to certain holders. Unless we otherwise indicate in a prospectus supplement, we will designate the corporate trust office of the debenture trustee in the City of New York as our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series.

All money we pay to a paying agent or the debenture trustee for the payment of the principal of or any premium or interest on any debt securities that remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the debt security thereafter may look only to us for payment thereof.

Governing Law

The indentures and the debt securities will be governed by and construed in accordance with the laws of the State of New York, except to the extent that the Trust Indenture Act of 1939 is applicable.

Subordination of Subordinated Debt Securities

The subordinated debt securities will be unsecured and will be subordinate and junior in priority of payment to certain of our other indebtedness to the extent described in a prospectus supplement. The subordinated indenture does not limit the amount of subordinated debt securities that we may issue. It also does not limit us from issuing any other secured or unsecured debt.

Outstanding Debt Securities

On August 19, 2015, we issued to our stockholders non-interest bearing redeemable convertible notes (the "Convertible Notes") in the aggregate principal amount of \$37.0 million. The Convertible Notes do not bear interest. The principal amounts under the Convertible Notes are convertible, at the option of each noteholder, into cash or into shares of the Company's common stock at a conversion rate of \$137.85 per share, and are payable in cash, if not previously redeemed or converted, at maturity on February 19, 2018, the 30-month anniversary of the closing of the issuance of the Convertible Notes.

On August 19, 2015, Targacept entered into an indenture (the "Convertible Notes Indenture") with American Stock Transfer & Trust Company, LLC, as trustee, and an escrow agreement with American Stock Transfer & Trust Company, LLC and Delaware Trust Company, LLC, as escrow agent, under which \$37.0 million, which represents the initial principal amount of the Convertible Notes, was deposited in a segregated escrow account for the benefit of the holders of the notes in order to facilitate the payment of the

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Convertible Notes upon redemption or at maturity. The Convertible Notes are our secured obligation, and the Convertible Notes Indenture does not limit its other indebtedness, secured or unsecured.

Holders of the Convertible Notes may submit conversion notices, which are irrevocable, instructing the trustee to convert such the Convertible Notes into shares of the common stock at a conversion price of \$137.85 per share. Following each conversion date, we will issue the number of whole shares of common stock issuable upon conversion as promptly as practicable (and in any event within 10 business days). The trustee will in turn release to us the respective amount of restricted cash to cover the stock issuance.

As of September 30, 2017, the Notes had a balance of \$5.5 million, \$31.2 million of the Notes were redeemed and \$0.3 million of the Notes were converted into common stock.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. The terms of any warrants offered under that prospectus supplement may differ from the terms described below.

The following summary description, together with the additional information we may include in any applicable prospectus supplements does not purport to be complete and is subject to, and qualified in its entirety by reference to, the form of warrant agreement and form of warrant certificate relating to each series of warrants that will be incorporated by reference as an exhibit to the registration statement that includes this prospectus or as an exhibit to a current report on Form 8-K if we offer warrants.

General

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase common stock, the number of shares of common stock purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreements and the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreements and warrants may be modified;
- federal income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up

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to 5:00 P.M. Eastern Time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

Any warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

Form, Exchange, and Transfer

We may issue the warrants in registered form or bearer form. Warrants issued in registered form, i.e., book-entry form, will be represented by a global security registered in the name of a depository, which will be the holder of all the warrants represented by the global security. Those investors who own beneficial interests in a global warrant will do so through participants in the depository's system, and the rights of these indirect owners will be governed solely by the applicable procedures of the depository and its participants. In addition, we may issue warrants in non-global form, i.e., bearer form. If any warrants are issued in non-global form, warrant certificates may be exchanged for new warrant certificates of different denominations, and holders may exchange, transfer, or exercise their warrants at the warrant agent's office or any other office indicated in the applicable prospectus supplement or other offering material.

Outstanding Warrants

As of January 19, 2017, we have outstanding warrants to purchase common stock as follows: (i) at any time until the 5-year anniversary of the original date of issuance in 2014, warrants to purchase an aggregate of 2,487 shares of our common stock at an exercise price of \$499.05 per share, (ii) at any time until the 5-year anniversary of the original date of issuance in 2015, warrants to purchase an aggregate of 9,467 shares of our common stock at an exercise price of \$49.91 per share, (iii) at any time until seven years from the date of the completion of the merger between Targacept and Catalyst Bio, a warrant to purchase 85 shares of our common stock at an exercise price of \$392.70, and (iv) at any time until the 5-year anniversary of the original date of issuance in 2017, 1,454,295 shares of our common stock at an exercise price of \$5.50 per share.

DESCRIPTION OF UNITS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

The following summary description, together with the additional information we may include in any applicable prospectus supplements does not purport to be complete and is subject to, and qualified in its entirety by reference to, the form of unit agreement and form of unit certificate relating to each series of units that will be incorporated by reference as an exhibit to the registration statement that includes this prospectus or as an exhibit to a current report on Form 8-K if we offer units.

General

We may issue units comprised of common stock, preferred stock, debt securities, debt obligations of third parties, including U.S. treasury securities, warrants or any combination thereof. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described below; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under “Description of Capital Stock,” “Description of Debt Securities” and “Description of Warrants” will apply to each unit and to any common stock, preferred stock, debt security or warrants included in each unit, respectively.

Issuance in Series

We may issue units in such amounts and in such numerous distinct series as we determine.

Enforceability of Rights by Holders of Units

Any unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

Title

We, any unit agents and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purpose and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary. See “Legal Ownership of Securities” below.

Outstanding Units

We have no outstanding units.

PLAN OF DISTRIBUTION

We may sell the securities being offered by this prospectus separately or together through any of the following methods:

- to or through one or more underwriters or dealers in a public offering and sale by them;
- directly to investors;
- through agents;
- through block trades in which the broker or dealer engaged to handle the block trade will attempt to sell the securities as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- through any combination if these methods of sale; or
- in any manner, as provided in the applicable prospectus supplement.

We may distribute securities from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the times of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

We will describe the method of distribution of the securities in the applicable prospectus supplement. We may also determine the price or other terms of the securities offered under this prospectus by use of an electronic auction. We will describe how any auction will determine the price or any other terms, how potential investors may participate in the auction and the nature of the obligations of the underwriter, dealer or agent in the applicable prospectus supplement.

Unless otherwise specified in the applicable prospectus supplement, each class or series of securities will be a new issue with no established trading market, other than our common stock, which is traded on The NASDAQ Capital Market. We may elect to list any other class or series of securities on any exchange, but we are not obligated to do so. It is possible that one or more underwriters may make a market in a class or series of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the securities.

Underwriters, dealers or agents may receive compensation in the form of discounts, concessions or commissions from us or our purchasers (as their agents in connection with the sale of the securities). In addition, underwriters may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they act as agent. These underwriters, dealers or agents may be considered to be underwriters under the Securities Act. As a result, discounts, commissions, or profits on resale received by the underwriters, dealers or agents may be treated as underwriting discounts and commissions. The prospectus supplement will identify any such underwriter, dealer or agent, and describe any compensation received by them from us. Only underwriters named in the prospectus supplement are underwriters of the securities offered by the prospectus supplement. Any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time.

We may sell the securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

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We may authorize agents or underwriters to solicit offers by certain types of institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

Underwriters, dealers and agents may be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments made by the underwriters, dealers or agents, under agreements between us and the underwriters, dealers and agents.

Any person participating in the distribution of common stock registered under the registration statement that includes this prospectus will be subject to applicable provisions of the Exchange Act, and the applicable SEC rules and regulations, including, among others, Regulation M, which may limit the timing of purchases and sales of any of our common stock by any such person. Furthermore, Regulation M may restrict the ability of any person engaged in the distribution of our common stock to engage in market-making activities with respect to our common stock. These restrictions may affect the marketability of our common stock and the ability of any person or entity to engage in market-making activities with respect to our common stock.

We may grant underwriters who participate in the distribution of the securities an option to purchase additional securities to cover overallocments, if any, in connection with the distribution. Any underwriter may engage in overallocation, stabilizing transactions, short-covering transactions and penalty bids in accordance with Regulation M that stabilize, maintain or otherwise affect the price of the offered securities. Overallocation involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the common stock in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the common stock originally sold by the dealer is purchased in a covering transaction to cover short positions. Those activities may cause the price of the common stock to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of the activities at any time. If any such activities will occur, they will be described in the applicable prospectus supplement.

Underwriters or agents and their associates may be customers of, engage in transactions with or perform services for us in the ordinary course of business and any such relationships will be described in the applicable prospectus supplement.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution.

LEGAL MATTERS

The validity of the securities being offered by this prospectus will be passed upon by Morrison & Foerster LLP of Palo Alto, CA. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in an applicable prospectus supplement.

EXPERTS

The consolidated balance sheets of Catalyst Biosciences, Inc. as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive loss, convertible preferred stock and stockholders' equity (deficit) and cash flows for each of the years then ended, have been audited by EisnerAmper LLP, independent registered public accounting firm, as stated in their report which is incorporated herein by reference. Such financial statements have been incorporated herein by reference in reliance on the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission, or the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference rooms at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference rooms. Our SEC filings are also available at the SEC's website at www.sec.gov and our website at www.catalystbiosciences.com. We have not incorporated by reference into this prospectus the information contained on our website and you should not consider it to be part of this prospectus. In addition, you can read and copy our SEC filings at the office of the National Association of Securities Dealers, Inc. at 1735 K Street, Washington, D.C. 20006.

We have filed a registration statement on Form S-3 with the SEC relating to the securities covered by this prospectus. This prospectus is a part of the registration statement and does not contain all of the information in the registration statement. You may review a copy of the registration statement at the SEC's public reference room in Washington, D.C., as well as through the SEC's Internet site at www.sec.gov.

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. In addition, information we file with the SEC in the future will automatically update and supersede information contained in this prospectus and any accompanying prospectus supplement.

This prospectus incorporates by reference the documents set forth below that we have previously filed with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2016 filed with the SEC on March 8, 2017;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017, June 30, 2017 and September 30, 2017; and
- our Current Report on Form 8-K filed with the SEC on February 2, 2017, February 10, 2017, April 13, 2017, April 24, 2017, June 16, 2017, July 14, 2017, September 22, 2017, November 1, 2017, November 17, 2017, December 11, 2017, December 14, 2017, December 18, 2017, December 20, 2017, December 22, 2017, January 4, 2018 and January 17, 2018.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, excluding, in each case, information deemed furnished and not filed until we sell all of the securities we are offering. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

We will provide to you at no cost a copy of any and all of the information incorporated by reference into the registration statement of which this prospectus is a part. You may make a request for copies of this information in writing or by telephone. Requests should be directed to:

Catalyst Biosciences, Inc.
260 Littlefield Ave.
South San Francisco, CA 94080
Attn: Fletcher Payne, Chief Financial Officer
(650) 871-0761

Shares



Common Stock

PROSPECTUS SUPPLEMENT

Sole Bookrunning Manager
JonesTrading

Joint Bookrunner
Ladenburg Thalmann

Lead Manager
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