

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549**

**FORM S-8  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933**

**CATALYST BIOSCIENCES, INC.  
(Formerly, Targacept, Inc.)**

(Exact Name of Registrant as Specified in its Charter)

DELAWARE

56-2020050

(State or Other Jurisdiction of  
Incorporation or Organization)

(I.R.S. Employer  
Identification No.)

260 Littlefield Avenue  
South San Francisco, CA 94080

(Address of Principal Executive Offices, including Zip Code)

CATALYST BIOSCIENCES, INC.  
(formerly, Targacept, Inc.)  
2015 STOCK INCENTIVE PLAN

(Full Title of the Plan)

Nassim Usman, Ph.D.  
President and Chief Executive Officer  
Catalyst Biosciences, Inc.  
260 Littlefield Avenue  
South San Francisco, CA 94080  
(650) 745-0655

(Name, Address and Telephone Number, including Area Code, of Agent for Service)

With a copy to:  
Fletcher Payne  
Chief Financial Officer  
Catalyst Biosciences, Inc.  
260 Littlefield Avenue  
South San Francisco, CA 94080  
(650) 871-0761

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

Large accelerated filer  Accelerated filer   
Non-accelerated filer  (Do not check if a smaller reporting company) Smaller reporting company

**CALCULATION OF REGISTRATION FEE**

Title of Securities To Be Registered	Amount To Be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee(2)
Common Stock, par value \$.001 per share	591,757	\$16.73	\$9,900,095	\$1,151

(1) This Registration Statement covers 591,757 shares available for issuance under the Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan. This Registration Statement also registers additional securities to be offered or issued upon adjustment or changes made to the registered

securities by reason of any stock splits, stock dividends or similar transactions as permitted by Rule 416(a) and Rule 416(b) under the Securities Act of 1933, as amended (the "Securities Act"). The 2015 Stock Incentive Plan authorizes the lesser of (i) 5 million shares of Common Stock and (ii) the number of shares of Common Stock that remain available under the 2006 Stock Incentive Plan as of the effective date of the 2015 Stock Incentive Plan. As of the effective date of the 2015 Stock Incentive Plan, 4,142,304 shares of Common Stock remained available for issuance under the 2006 Stock Incentive Plan. Accordingly, this Registration Statement covers the 4,142,304 shares of Common Stock authorized for issuance under the 2015 Stock Incentive Plan, adjusted to reflect the Registrant's seven-for-one reverse stock split on August 20, 2015.

- (2) Pursuant to Rule 457(c) and (h)(1) under the Securities Act, based on the average (\$2.39) of the high (\$2.47) and low (\$2.30) prices of the Registrant's Common Stock on August 18, 2015, as reported on The NASDAQ Capital Market, multiplied by seven to account for the Registrant's seven-for-one reverse stock split on August 20, 2015.
- 
-

## EXPLANATORY NOTE

Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) (the “Company”) has prepared this Registration Statement (the “Registration Statement”) in accordance with the requirements of Form S-8 under the Securities Act to register an aggregate of 591,757 shares of common stock of the Company authorized for issuance under the Company’s 2015 Stock Incentive Plan.

### PART I

#### INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

**Item 1. Plan Information.\***

**Item 2. Registrant Information and Employee Plan Annual Information.\***

\* The documents containing the information specified in Part I of Form S-8 will be sent or given to employees as specified by Rule 428(b)(1) of the Securities Act. Such documents need not be filed with the Securities and Exchange Commission (the “Commission”) either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 of the Securities Act. These documents and the documents incorporated by reference in this Registration Statement pursuant to Item 3 of Part II of this Registration Statement, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act.

### PART II

#### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

**Item 3. Incorporation of Documents by Reference.**

The following documents filed by the Company with the Commission are incorporated herein by reference:

(a) The Company’s Joint Proxy Statement/Prospectus filed pursuant to Rule 424(b)(3) of the Securities Act of 1933, as amended (the “Securities Act”), filed with the Commission on July 28, 2015;

(b) The Company’s Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2015 and June 30, 2015, filed with the Commission on May 7, 2015 and July 31, 2015, respectively;

(c) The Company’s Current Reports on Form 8-K filed with the Commission on March 6, 2015, March 6, 2015 (solely with respect to Item 8.01), March 17, 2015, April 6, 2015, April 16, 2015, May 12, 2015, May 14, 2015, August 4, 2015, August 19, 2015 and August 20, 2015;

(d) The description of the Company’s Common Stock, par value \$0.001 per share, contained in the Company’s Registration Statement on Form 8-A filed with the Commission on April 6, 2006, with respect to such Common Stock, including any subsequent amendment or report filed for the purposes of updating such description; and

(e) All other reports filed pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), since the end of the fiscal year referred to in (a) above.

All documents subsequently filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities remaining unsold, shall be deemed to be incorporated by reference herein and to be a part hereof from the date of the filing of such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document which also is or deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

**Item 4. Description of Securities.**

Not applicable.

**Item 5. Interests of Named Experts and Counsel.**

Not applicable.

**Item 6. Indemnification of Directors and Officers.**

The Company's Fourth Amended and Restated Certificate of Incorporation, as amended (as may be further amended and in effect from time to time, the "Certificate"), provides that the Company's directors shall not be personally liable to the Company or its 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 the Company or its 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 General Corporation Law of the State of Delaware, as amended (the "DGCL"), or for any transaction from which the director derived an improper personal benefit. Under the DGCL, the Company's directors have a fiduciary duty to the Company that is not eliminated by this provision of the Certificate 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 the 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 also permits a corporation to indemnify any person who was or is a party or is threatened to be made a party to any action by or in the right of the corporation by reason of the fact the person is or was serving as a director, officer, employee or agent of the corporation, or as a director, officer, employee or agent of another entity at the request of the corporation, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of the action if the person acted in good faith in a manner the person reasonably believed to be not opposed to the best interests of the corporation; however, no indemnification is permitted as to any matter where the person has been adjudged to be liable to the corporation, except in limited instances. 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. The Certificate provides that, to the fullest extent

permitted by Section 145 of the DGCL, the Company shall indemnify any person who is or was a director or officer of the Company, or is or was serving at the Company's 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.

The Company's amended and restated bylaws (the "Bylaws") provide that the Company 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 the Company or is or was serving at the Company's 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. Additionally, in proceedings other than those by or in the right of the Company, the Bylaws provide that such indemnification right includes the right to advancement of expenses; provided, however, that if the DGCL so requires, an advancement of expenses incurred by an indemnitee in his or her capacity as a director or officer (and not in any other capacity in which service was or is rendered by such indemnitee) will be made only upon delivery to the Company of an undertaking, by or on behalf of such indemnitee, to repay all amounts so advanced if it will ultimately be determined that such indemnitee is not entitled to indemnification by the Company under the Bylaws or otherwise. The Bylaws further provide that any indemnification thereunder will not be deemed exclusive of any other rights to which indemnitees may be entitled under the Certificate, Bylaws, any agreement, vote of stockholders or disinterested directors or otherwise.

Section 145 of the DGCL also empowers a corporation to purchase insurance for its officers and directors for such liabilities. The Company maintains liability insurance for its officers and directors.

In addition, the Company has entered into agreements with its directors and officers under which, among other things, the Company has agreed to indemnify them against expenses incurred in any proceeding, including any action by the Company, in which any such person was, is or is threatened to be made a party or a participant by reason of such person's status as a present or former director, officer, employee or agent of the Company or, at the Company's request, any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise. At present, there is no pending litigation or proceeding involving any director or officer as to which indemnification will be required or permitted under the Certificate, and the Company is not aware of any threatened litigation or proceeding that may result in a claim for such indemnification.

Pursuant to the Agreement and Plan of Merger dated March 5, 2015, as amended (the "Merger Agreement"), the Company agreed that all rights to indemnification, exculpation or advancement of expenses existing prior to the closing of the merger described therein (the "Merger") in favor of, and all limitations on the personal liability of, each present and former director and officer of the Company as provided for in its organizational documents in effect as of the date of the Merger Agreement would continue to be honored and in full force and effect for a period of six years after the closing of the Merger, which occurred on August 20, 2015. Pursuant to the terms of the Merger Agreement, the Company has also purchased a six-year "tail" directors' and officers' liability policy that became effective as of the closing date as of the Merger.

**Item 7. Exemption from Registration Claimed.**

Not applicable.

**Item 8. Exhibits.**

The following exhibits are filed as a part of this Registration Statement:

<u>Exhibit No.</u>	<u>Description</u>
4.1	Fourth Amended and Restated Certificate of Incorporation of the Company, which is incorporated herein by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-8 (Registration No. 333-133881) filed with the Commission on May 8, 2006.
4.2	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation of the Company, which is incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Commission on August 20, 2015.
4.3	Bylaws of the Company, as amended and restated effective March 5, 2015, which are incorporated herein by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Commission on March 6, 2015.
4.4	Specimen Certificate of Common Stock, which is incorporated herein by reference to Exhibit 4.1 to Amendment No. 3 to the Company's Registration Statement on Form S-1/A (File No. 333-131050) filed with the Commission on March 16, 2006.
4.5(a)	Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, by and among the Company and certain stockholders of the Company, which is incorporated herein by reference to Exhibit 4.2(a) to the Company's Registration Statement on Form S-1 (File No. 333-131050) filed with the Commission on January 17, 2006.
4.5(b)	Amendment No. 1, dated December 6, 2004, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, which is incorporated herein by reference to Exhibit 4.2(b) to the Company's Registration Statement on Form S-1 (File No. 333-131050) filed with the Commission on January 17, 2006.
4.5(c)	Amendment No. 2, dated March 16, 2006, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, which is incorporated herein by reference to Exhibit 4.2(c) to Amendment No. 4 to the Company's Registration Statement on Form S-1/A (File No. 333-131050) filed with the Commission on March 24, 2006.
5.1	Opinion of Womble Carlyle Sandridge & Rice, LLP, counsel to the Company, regarding the legality of the securities being registered.
23.1	Consent of Womble Carlyle Sandridge & Rice, LLP, counsel to the Company (included in Exhibit 5).
23.2	Consent of Ernst & Young LLP.
23.3	Consent of EisnerAmper LLP.
24	Power of Attorney (included on signature page).
99	Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan, which is incorporated herein by reference to Annex F of the Company's Joint Proxy Statement/Prospectus filed pursuant to Securities Act Rule 424(b)(3) filed with the Commission on July 28, 2015.

**Item 9. Undertakings.**

(a) The undersigned Company hereby undertakes:

- (1) to file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:
  - (i) to include any prospectus required by Section 10(a)(3) of the Securities Act;
  - (ii) to reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement; and
  - (iii) to include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with, or furnished to the Commission by the Company pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement.

- (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

- (b) The undersigned Company hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Company's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Company pursuant to the foregoing provisions, or otherwise, the Company has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Company of expenses incurred or paid by a director, officer or controlling person of the Company in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Company will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

**SIGNATURES**

**THE REGISTRANT**

Pursuant to the requirements of the Securities Act of 1933, Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of South San Francisco, State of California, on this 21<sup>st</sup> day of August, 2015.

**CATALYST BIOSCIENCES, INC.**

By: /s/ Nassim Usman, Ph.D.  
Nassim Usman, Ph.D.  
Chief Executive Officer and President

Each of the undersigned, being a director and/or officer of Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) (the "Company"), hereby nominates, constitutes and appoints Nassim Usman, Ph.D. and Fletcher Payne, or either of them severally, to be his true and lawful attorney-in-fact and agent and to sign in his name and on his behalf in any and all capacities stated below, and to file with the Securities and Exchange Commission (the "Commission"), a Registration Statement on Form S-8 (the "Registration Statement") relating to the issuance of certain shares of the common stock, \$0.001 par value, of the Company (the "Common Stock") in connection with the Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan, and to file any and all amendments, including post-effective amendments, exhibits and other documents and instruments in connection therewith, to the Registration Statement, making such changes in the Registration Statement as such attorney-in-fact and agent deems appropriate, and generally to do all such things on his behalf in any and all capacities stated below to enable the Company to comply with the provisions of the Securities Act of 1933, as amended (the "Securities Act"), and all requirements of the Commission.

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons in the capacities indicated on August 21, 2015.

/s/ Nassim Usman, Ph.D.  
Name: Nassim Usman, Ph.D.  
Title: Chief Executive Officer, President and  
Director (principal executive officer)

/s/ Fletcher Payne  
Name: Fletcher Payne  
Title: Chief Financial Officer (principal  
financial officer and principal accounting officer)

/s/ Harold E. Selick, Ph.D.  
Name: Harold E. Selick, Ph.D.  
Title: Chairman of the Board of Directors

/s/ Stephen A. Hill, M.D.  
Name: Stephen A. Hill, M.D.  
Title: Director

/s/ Augustine Lawlor  
Name: Augustine Lawlor  
Title: Director

/s/ Jeff Himawan, Ph.D.  
Name: Jeff Himawan, Ph.D.  
Title: Director

/s/ John P. Richard  
Name: John P. Richard  
Title: Director

/s/ Errol B. De Souza, Ph.D.  
Name: Errol B. De Souza, Ph.D.  
Title: Director



**EXHIBIT INDEX**  
**to**  
**Registration Statement on Form S-8 of**  
**Catalyst Biosciences, Inc. (formerly, Targacept, Inc.)**

<u>Exhibit No.</u>	<u>Description</u>
4.1	Fourth Amended and Restated Certificate of Incorporation of the Company, which is incorporated herein by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-8 (Registration No. 333-133881) filed with the Commission on May 8, 2006.
4.2	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation of the Company, which is incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Commission on August 20, 2015.
4.3	Bylaws of the Company, as amended and restated effective March 5, 2015, which are incorporated herein by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Commission on March 6, 2015.
4.4	Specimen Certificate of Common Stock, which is incorporated herein by reference to Exhibit 4.1 to Amendment No. 3 to the Company's Registration Statement on Form S-1/A (File No. 333-131050) filed with the Commission on March 16, 2006.
4.5(a)	Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, by and among the Company and certain stockholders of the Company, which is incorporated herein by reference to Exhibit 4.2(a) to the Company's Registration Statement on Form S-1 (File No. 333-131050) filed with the Commission on January 17, 2006.
4.5(b)	Amendment No. 1, dated December 6, 2004, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, which is incorporated herein by reference to Exhibit 4.2(b) to the Company's Registration Statement on Form S-1 (File No. 333-131050) filed with the Commission on January 17, 2006.
4.5(c)	Amendment No. 2, dated March 16, 2006, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004, which is incorporated herein by reference to Exhibit 4.2(c) to Amendment No. 4 to the Company's Registration Statement on Form S-1/A (File No. 333-131050) filed with the Commission on March 24, 2006.
5.1	Opinion of Womble Carlyle Sandridge & Rice, LLP, counsel to the Company, regarding the legality of the securities being registered.
23.1	Consent of Womble Carlyle Sandridge & Rice, LLP, counsel to the Company (included in Exhibit 5).
23.2	Consent of Ernst & Young LLP.
23.3	Consent of EisnerAmper LLP.
24	Power of Attorney (included on signature page).
99	Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan, which is incorporated herein by reference to Annex F of the Company's Joint Proxy Statement/Prospectus filed pursuant to Securities Act Rule 424(b)(3) filed with the Commission on July 28, 2015.

## [Letterhead of Womble Carlyle Sandridge &amp; Rice, LLP]

August 21, 2015

Catalyst Biosciences, Inc. (formerly, Targacept, Inc.)  
260 Littlefield Avenue  
South San Francisco, California 94080

Re: Registration Statement on Form S-8 Relating to the Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan

Ladies and Gentlemen:

We have acted as counsel to Catalyst Biosciences, Inc. (formerly, Targacept, Inc.), a Delaware corporation (the "Company"), in connection with the preparation of the Company's above-referenced registration statement on Form S-8 (the "Registration Statement") under the Securities Act of 1933, as amended (the "Securities Act"), filed by the Company with the Securities and Exchange Commission (the "Commission"). The Registration Statement relates to 591,757 shares of the Company's common stock, \$0.001 par value (the "Shares"), which are proposed to be offered and sold pursuant to the Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan (the "Plan"). This opinion is provided pursuant to the requirements of Item 8(a) of Form S-8 and Item 601(b)(5) of Regulation S-K.

As the Company's counsel, we have examined originals or copies, certified or otherwise identified to our satisfaction, of the Company's certificate of incorporation and bylaws, each as amended to date, and minutes and records of the corporate proceedings of the Company relating to the filing of the Registration Statement and the issuance of the Shares, as provided to us by the Company, certificates of public officials and of representatives of the Company, and statutes and other instruments and documents, as a basis for the opinions hereinafter expressed. In rendering this opinion, we have relied upon certificates of public officials and representatives of the Company with respect to the accuracy of the factual matters contained in such certificates.

In connection with such examination, we have assumed (a) the genuineness of all signatures and the legal capacity of all signatories; (b) the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as certified or photostatic copies; and (c) the proper issuance and accuracy of certificates of public officials and representatives of the Company. In rendering opinions as to future events, we have assumed the facts and law existing on the date hereof.

Based on and subject to the foregoing, and having regard for such legal considerations as we deem relevant, it is our opinion that the Shares have been duly authorized by all necessary corporate action on the part of the Company, and, upon issuance, delivery and payment therefor in the manner contemplated by the Plan and the Registration Statement, the Shares will be validly issued, fully paid and non-assessable.

This opinion is limited to the Delaware General Corporation Law as currently in effect, and we are expressing no opinion as to the effect of the laws of any other jurisdiction.

This opinion is rendered as of the date hereof, and we undertake no obligation to advise you of any changes in applicable law or any other matters that may come to our attention after the date hereof.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and to any reference to the name of our firm in the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Womble Carlyle Sandridge & Rice, LLP

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Catalyst Biosciences, Inc. (formerly, Targacept, Inc.) 2015 Stock Incentive Plan of our reports dated March 16, 2015, with respect to the financial statements of Targacept, Inc. and the effectiveness of internal control over financial reporting of Targacept, Inc. included in the Catalyst Biosciences, Inc.'s (formerly known as Targacept, Inc.) Annual Report (Form 10-K) for the year ended December 31, 2014, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Raleigh, North Carolina  
August 20, 2015

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statement on Form S-8 to be filed on or about August 21, 2015 of our report dated May 22, 2015, on our audits of the financial statements of Catalyst Biosciences, Inc. (“Predecessor Catalyst”), now a wholly-owned subsidiary of Catalyst Biosciences, Inc. (formerly, Targacept, Inc.), as of December 31, 2014 and 2013 and for each of the years in the two-year period ended December 31, 2014, included in the Form 424B3 filed on July 28, 2015 with the Securities and Exchange Commission. Our report includes an explanatory paragraph about the existence of substantial doubt concerning Predecessor Catalyst’s ability to continue as a going concern.

/s/ EisnerAmper LLP

Iselin, New Jersey  
August 21, 2015