

FOIA CONFIDENTIAL TREATMENT REQUEST+1 617 526 6000 (t)
+1 617 526 5000 (f)**The entity requesting confidential treatment is:****Catabasis Pharmaceuticals, Inc.****One Kendall Square****Bldg. 1400E, Suite B14202****Cambridge, Massachusetts 02139****Attn: Jill C. Milne****President and Chief Executive Officer****(617) 349-1971**

May 29, 2015

VIA EDGAR SUBMISSION

Securities and Exchange Commission

Division of Corporation Finance

100 F Street, NE

Washington, DC 20549

Attention: Jeffrey P. Riedler

Re: Catabasis Pharmaceuticals, Inc.

Registration Statement on Form S-1

Filed May 13, 2015

File No. 333-204144

Ladies and Gentlemen:

On behalf of Catabasis Pharmaceuticals, Inc. (the "Company"), set forth below is additional information to supplement the Company's prior response to comment 10 contained in the letter dated February 19, 2015 from the staff (the "Staff") of the Securities and Exchange Commission (the "Commission") relating to the Draft Registration Statement on Form S-1 (File No. 377-00907), submitted by the Company to the Commission on January 23, 2015. Such Draft Registration Statement has been updated by the Company as reflected in the registration statement referenced above (File No. 333-204144), which was publicly filed by the Company on May 13, 2015 (the "Registration Statement"). The supplemental response set forth below is based upon information provided to Wilmer Cutler Pickering Hale and Dorr LLP by the Company.

* * *

Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109

Beijing Berlin Boston Brussels Denver Frankfurt London Los Angeles New York Oxford Palo Alto Washington

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Determining the Fair Value of Common Stock Prior to the IPO

As disclosed in the Registration Statement, the Company has historically determined the fair value of its common stock on each option grant date based on a variety of factors, including contemporaneous and, in certain instances, retrospective valuations with the assistance of third-party valuation specialists, as of October 31, 2013, April 1, 2014, August 28, 2014, December 31, 2014 and March 17, 2015 using a hybrid of the option-pricing method and the probability-weighted expected return method. The valuation analyses included judgments regarding the determination of an appropriate valuation method at each grant date, and other

judgments and estimates including the time to completing an initial public offering (“IPO”) or other liquidity event, the probabilities assigned to such events, and the related valuations under each scenario, among other factors. The Company determined that the fair value of its common stock increased from \$0.53 per share as of March 19, 2014 to \$0.86 per share at April 30, 2015. The primary drivers of the increase were an increase in the probability of an IPO to 70% as of April 30, 2015 based on the Company’s assessment of its development pipeline, market conditions and progress towards undertaking an IPO, as well as decreases in the time to a projected liquidity event and the discount for lack of marketability of the Company’s common stock.

Initial Public Offering Price Range

Rule 83 Confidential Treatment Request by Catabasis Pharmaceuticals, Inc. Request #1

The Company has taken into consideration guidance and market data from its underwriting team that have been presented to and reviewed by the Board of Directors of the Company (the “Board”) on May 21, 2015. To provide further information for the Staff’s consideration, the Company supplementally advises the Staff that the Company currently anticipates that the price range for this offering will be within the range of \$[**] to \$[**] per share (before giving effect to a reverse stock split that the Company plans to implement prior to effectiveness of the Registration Statement). This anticipated price range is based on a number of factors, including the Company’s future prospects and those of the Company’s industry in general, the Company’s financial and operating information in recent periods, the market prices of securities of companies engaged in activities similar to the Company’s, existing conditions in the public capital markets and preliminary discussions with the underwriters regarding potential valuations of the Company. The actual price range to be included in a subsequent amendment to the Registration Statement (which will comply with the Staff’s interpretation regarding the parameters of a bona fide price range) has not yet been determined and remains subject to adjustment based on factors outside of the Company’s control. However, the Company believes that the foregoing indicative price range will not be subject to significant change.

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The anticipated price range for this offering was determined with reference to several quantitative and qualitative factors, each of which contributed to the difference between the Company’s most recent determination of the value of its common stock as of April 30, 2015 of \$0.86 per share and the midpoint of the anticipated offering price range of \$[**] per share. Specifically, the Company believes that the difference between the fair value of its common stock determined as of April 30, 2015 and the midpoint of the anticipated price range for this offering is primarily the result of the following factors:

Catabasis Pharmaceuticals, Inc. respectfully requests that the information contained in the response be treated as confidential information and that the Commission provide timely notice to Jill C. Milne, President and Chief Executive Officer, Catabasis Pharmaceuticals, Inc., One Kendall Square, Bldg. 1400E, Suite B14202, Cambridge, Massachusetts 02139, (617) 349-1971, before it permits any disclosure of the bracketed information in Request #1.

- The estimated price range for this offering necessarily assumes that the Company’s IPO has occurred and a public market for the Company’s common stock has been created, and therefore excludes any discount for lack of marketability of the Company’s common stock. In the April 30, 2015 valuation, the discount for lack of marketability that was applied to the IPO and sales scenarios was 6% and 23%, respectively.
 - The estimated price range for this offering necessarily assumes that all of the Company’s preferred stock has converted into common stock in connection with this offering. The Company’s preferred stock currently has substantial economic rights and preferences over the Company’s common stock. Upon the closing of this offering, all outstanding shares of the Company’s preferred stock will convert into common stock, thus eliminating the superior rights and preferences of the preferred stock as compared to the common stock.
 - The estimated price range is based only upon a scenario in which the Company completes this offering and is not probability weighted, in contrast to the Company’s prior valuations of its common stock, which considered multiple potential outcomes, some of which would have resulted in a lower value of the Company’s common stock than an initial public offering. In the April 30, 2015 valuation, the probability weighting for the IPO scenario was 70%.
 - In May 2015, the Company received preliminary results from the first four cohorts of the multiple ascending dose portion of its Phase 1 clinical trial of CAT-2054. The Company believes these results support advancement of CAT-2054 into a Phase 2a clinical trial.
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- In recent “testing-the-waters” meetings, the Company received positive feedback from potential investors.
- The Company has taken several steps towards the completion of an IPO, including:
 - on May 13, 2015, the Company publicly filed the Registration Statement with the Commission;
 - the Board approved the Company’s certificate of incorporation, bylaws, committee charters and various governance policies that will become effective upon the closing of this offering; and
 - in anticipation of this offering, the Board approved a certificate of amendment to the Company’s certificate of incorporation in order to effect a reverse stock split of the Company’s common stock.
- The proceeds of a successful IPO would substantially strengthen the Company’s balance sheet by increasing its cash resources. For example, under its credit facility and subject to the terms thereof, the Company will have access to an additional \$10 million of borrowings upon completion of this offering. In addition, the completion of this offering would provide the Company with more ready access to the public company equity and debt markets.
- In the public markets, the Company believes there are investors who may apply more qualitative and subjective valuation criteria to certain of its clinical assets than the valuation methods applied in the Company’s valuations, although there can be no assurance that this will in fact be the case. As a private company, the Company used a more quantitative methodology to determine the fair value of its common stock and this methodology differs from the methodology used to determine the estimated price range for this offering. The estimated price range for this offering was not derived using a formal determination of fair value, but rather was determined by negotiation between the Company and the underwriters. In particular, the estimate of fair value of the Company’s common stock as of April 30, 2015 was not a factor in setting the estimated price range for this offering.
- In addition to the above factors, in late March 2015, the Company received guidance and market data from its underwriting team that was presented to and reviewed by the Board that indicated increasing volatility in the life sciences IPO market and less favorable market conditions. Subsequently, in early May 2015, the Company received guidance and market data from its underwriting team that was presented to and reviewed by the Board that indicated there had been improvement in recent market prices of publicly

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traded shares of generally comparable companies and in the demand for such shares. Through May 22, 2015, the Nasdaq Biotechnology Index (BTK) had risen by 4% since April 1, 2015, and by 21% since January 1, 2015. In addition, many 2015 biotechnology IPOs have seen strong aftermarket performance, with stock prices of the 12 biotech companies pricing IPOs (with a minimum offering size of \$20 million) in the second quarter of 2015 rising by an average of 29% and the stock prices of the 22 biotech companies pricing IPOs (with a minimum offering size of \$20 million) since January 1, 2015 rising by an average of 22% through May 22, 2015.

The Company respectfully requests that the Staff return to the undersigned this letter pursuant to Rule 418 of the Securities Act of 1933, as amended, once the Staff has completed its review. For the convenience of the Staff, we have provided a self-addressed stamped envelope for this purpose. We respectfully reserve the right to request that this letter be returned to us at an earlier date.

In addition, the Company requests confidential treatment under 17 C.F.R. § 200.83 for the contents of this letter and has submitted a separate request for confidential treatment in accordance therewith to the Commission’s Office of Freedom of Information and Privacy Act Operations.

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If you have any further questions or comments, or if you require any additional information, please contact the undersigned by telephone at (617) 526-6633. Thank you for your assistance.

Very truly yours,

/s/ Rosemary G. Reilly

Rosemary G. Reilly

cc: Jill C. Milne
Darren DeStefano

Office of Freedom of Information and Privacy Act Operations
Securities and Exchange Commission
100 F Street N.E., Mail Stop 2736
Washington, D.C. 20549
