

Morgan Stanley & Co. LLC  
1585 Broadway  
New York, NY 10036

Merrill Lynch, Pierce, Fenner & Smith  
Incorporated  
One Bryant Park  
New York, New York 10036

Cowen and Company, LLC  
599 Lexington Avenue  
New York, New York 10022

October 2, 2017

**VIA EDGAR AND E-MAIL**

United States Securities and Exchange Commission  
Division of Corporation Finance  
100 F Street, N.E.  
Washington, D.C. 20549

**Re: Rhythm Pharmaceuticals, Inc.  
Registration Statement, as amended on Form S-1 (File No. 333-220337)**

Ladies and Gentlemen:

In accordance with and pursuant to Rule 461 of the General Rules and Regulations of the Securities and Exchange Commission under the Securities Act of 1933, as amended (the “Securities Act”), we, the representatives of the several underwriters (the “Representatives”), hereby join in the request of Rhythm Pharmaceuticals, Inc. that the effective time of the above-referenced Registration Statement be accelerated so that it will be declared effective at 4:00 p.m., Eastern time, on October 4, 2017, or as soon thereafter as practicable.

Pursuant to Rule 460 of the General Rules and Regulations under the Securities Act, please be advised that during the period from September 25, 2017 through the date hereof, approximately 2,550 copies of the preliminary prospectus, dated September 25, 2017, included in the above-referenced Registration Statement were distributed to prospective underwriters, institutions, dealers and others.

We were advised on January 15, 2016 by the Corporate Financing Department of the Financial Industry Regulatory Authority that it has reviewed the above-captioned proposed offering and that it has determined to raise no objections with respect to the fairness of the terms and arrangements of the offering.

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Each of the Representatives confirms on behalf of itself and the other participating underwriters that they have complied and will continue to comply with the requirements of Rule 15c2-8 promulgated under of the Securities Exchange Act of 1934, as amended, in connection with the above-referenced issue.

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Very truly yours,

MORGAN STANLEY & CO. LLC  
MERRILL LYNCH, PIERCE, FENNER & SMITH  
INCORPORATED  
COWEN AND COMPANY, LLC

As Representatives of the several Underwriters

By: MORGAN STANLEY & CO. LLC

By: /s/ Kathy Bergsteinsson  
Name: Kathy Bergsteinsson  
Title: Managing Director

By: MERRILL LYNCH, PIERCE, FENNER & SMITH  
INCORPORATED

By: /s/ Richard Diaz

Name: Richard Diaz  
Title: Vice President

By: COWEN AND COMPANY, LLC

By: /s/ Jason Fenton  
Name: Jason Fenton  
Title: Managing Director

[Signature Page to Representative Acceleration Request]

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