

November 10, 2021

**Via EDGAR Transmission**

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

Attention: Jane Park

**Re: Rhythm Pharmaceuticals, Inc.  
Registration Statement on Form S-3  
Filed November 2, 2021  
Registration No. 333-260689**

Ladies and Gentlemen:

In accordance with Rule 461 of Regulation C of the General Rules and Regulations under the Securities Act of 1933, as amended, we hereby request the acceleration of the effective date of the above-referenced Registration Statement so that it will become effective on November 15, 2021, at 4:00 p.m., Eastern Time, or as soon thereafter as practicable, or at such later time as Rhythm Pharmaceuticals, Inc. (the "Company") or its counsel may request via telephone call to the staff. Please contact Wesley C. Holmes of Latham & Watkins LLP, counsel to the Company, at (617) 948-6027, or in his absence, Jennifer Yoon at (617) 880-4540, to provide notice of effectiveness, or if you have any other questions or concerns regarding this matter.

Sincerely yours,

**Rhythm Pharmaceuticals, Inc.**

By: /s/ Hunter Smith  
Hunter Smith  
Chief Financial Officer

cc: Peter N. Handrinios  
Wesley C. Holmes

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