



DIVISION OF  
CORPORATION FINANCE

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

November 4, 2016

Geert Cauwenbergh  
President and Chief Executive Officer  
RXi Pharmaceuticals Corp.  
257 Simarano Drive  
Suite 101  
Marlborough, MA 01752

**Re: RXi Pharmaceuticals Corp.  
Registration Statement on Form S-1  
Filed October 21, 2016  
File No. 333-214199**

Dear Dr. Cauwenbergh:

We have limited our review of your registration statement to those issues we have addressed in our comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Registration Statement on Form S-1

Facing Page

1. In your Fee Table, please revise to calculate the registration fee of the units based on the offer price of the units and the exercise price of the warrants, and calculate the fee of the common stock underlying the warrants based on the exercise price of the warrants. For guidance, please refer to Securities Act Rules Compliance and Disclosure Interpretations 240.05 and 240.06, available on the Commission's website.

Geert Cauwenbergh  
RXi Pharmaceuticals Corp.  
November 4, 2016  
Page 2

Cover Page

2. Although Rule 430A of the Securities Act of 1933 permits registrants to omit certain pricing-related information from a registration statement that is declared effective, your filing must include the amount of securities to be offered in a pre-effective amendment. Accordingly, please confirm that you will revise your disclosure to specify: (i) the number of each of the Class A units and Class B units to be offered; (ii) the number of shares of common stock per Class A unit and the number of shares of Series B Convertible Preferred shares per Class B unit; and (iii) the number of warrants per each Class A unit and Class B unit.

We remind you that the company and its management are responsible for the accuracy and adequacy of their disclosures, notwithstanding any review, comments, action or absence of action by the staff.

Refer to Rules 460 and 461 regarding requests for acceleration. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Please contact Joseph McCann, Staff Attorney, at (202) 551-6262 with any questions.

Division of Corporation Finance  
Office of Healthcare and  
Insurance