



DIVISION OF  
CORPORATION FINANCE

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

December 5, 2016

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

**Re: RXi Pharmaceuticals Corp.  
Amendment No. 2 to Registration Statement on Form S-1  
Filed November 30, 2016  
File No. 333-214199**

Dear Dr. Cauwenbergh:

We have reviewed your amended registration statement and have the following comment. 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 comment applies 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 the comment, we may have additional comments.

Amendment No. 2 to Registration Statement on Form S-1

Exhibits

1. We refer to Exhibit 5.1. Please have counsel revise to opine on the legality of the Class A and Class B units.

Please contact Joseph McCann at (202) 551-6262 or Mary Beth Breslin at (202) 551-3625 with any questions.

Division of Corporation Finance  
Office of Healthcare & Insurance