



DIVISION OF
CORPORATION FINANCE

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

January 20, 2011

Noah D. Beerman
President and Chief Executive Officer
RXi Pharmaceuticals Corporation
60 Prescott Street
Worcester, Massachusetts 01605

Re: RXi Pharmaceuticals Corporation
Form 10-K for the Fiscal Year Ended December 31, 2009
Filed March 31, 2010
Schedule 14A filed April 23, 2010
Form 10-Q for the Quarterly Period Ended March 31, 2010
Filed May 17, 2010
File No. 001-33958

Dear Mr. Beerman:

We have completed our review of your filings and do not have any further comments at this time.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Arthur B. Price (Ropes & Gray LLP)