



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

DIVISION OF
CORPORATION FINANCE

Mailstop 4720

June 2, 2016

Marc Schneebaum
Senior Vice President and Chief Financial Officer
Synta Pharmaceuticals Corp.
45 Hartwell Avenue
Lexington, Massachusetts 02421

**Re: Synta Pharmaceuticals Corp.
Form PREM14A
Filed May 19, 2016
File No. 001-33277**

Dear Mr. Schneebaum:

We have completed our review of your filing. We remind you that our comments or changes to disclosure in response to our comments do not foreclose the Commission from taking any action with respect to the company or the filing and the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States. We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Exchange Act of 1934 and all applicable rules require.

Sincerely,

/s/ Suzanne Hayes

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Matthew Gardella
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.