

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

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.