

LEHMAN BROTHERS

February 1, 2007

Securities and Exchange Commission
Division of Corporate Finance
100 F Street, N.E.
Washington, D.C. 20549

Re: Synta Pharmaceuticals Corp.
Registration Statement on Form S-1 (File No. 333-138894)

Dear Mr. Krug:

As underwriters of the Company's proposed public offering of up to 6,900,000 shares of common stock, we hereby join the Company's request for acceleration of the above-referenced Registration Statement, requesting effectiveness for 2:00p.m. (NYT) on February 5, 2007, or as soon thereafter as is practicable.

Pursuant to Rule 460 of the General Rules and Regulations under the Securities Act of 1933, we wish to advise you that we have effected the following distribution of the Company's Preliminary Prospectus dated January 23, 2007, through the date hereof:

Preliminary Prospectus dated January 23, 2007:

6,299 copies to prospective Underwriters, institutional investors, dealers and others

The undersigned advise that they have complied and will continue to comply with Rule 15c2-8 under the Securities Exchange Act of 1934.

Very truly yours,

BEAR, STEARNS & CO. INC.
LEHMAN BROTHERS INC.

As Representatives of the several Underwriters

By: LEHMAN BROTHERS INC.

By: /s/ Victoria Hale
Victoria Hale
Vice President

SYNTA PHARMACEUTICALS CORP.

February 1, 2007

VIA EDGAR

Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attention: John L. Krug

Re: **Synta Pharmaceuticals Corp.**
Registration Statement on Form S-1
File No. 333-138894 (the "Registration Statement")

Dear Mr. Krug:

Pursuant to Rule 461 of Regulation C of the Securities Act of 1933, as amended, Synta Pharmaceuticals Corp. (the "Company") hereby requests that the above-referenced Registration Statement be made effective at 2:00 p.m., Eastern time, on February 5, 2007, or as soon thereafter as practicable.

In connection with the foregoing request, the Company acknowledges the following:

- should the Commission or the staff, acting pursuant to delegated authority, declare the Registration Statement effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the Company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the Company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

The cooperation of the staff in meeting the timetable described above is very much appreciated. Please call Brian Keane or Jon Kravetz, of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel to the Company, at (617) 542-6000 with any comments or questions regarding this matter.

Very truly yours,

SYNTA PHARMACEUTICALS CORP.

/s/ Keith S. Ehrlich

Name: Keith S. Ehrlich
Title: Vice President, Finance and Administration,
Chief Financial Officer
