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

DIVISION OF
CORPORATION FINANCE

January 13, 2016

Via E-mail
Briggs W. Morrison, M.D.
Chief Executive Officer
Syndax Pharmaceuticals, Inc.
400 Totten Pond Road, Suite 110
Waltham, Massachusetts 02451

Re: Syndax Pharmaceuticals, Inc.
Registration Statement on Form S-1
Filed January 4, 2016
File No. 333-208861

Dear Dr. Morrison:

We have reviewed your registration statement and have the following comments. 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 comments apply 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 these comments, we may have additional comments.

Business
Clinical Development of Entinostat, page 84

1. The table displaying your pipeline product candidates should reflect the actual, and not the anticipated, status of your pipeline candidates as of the latest practicable date. The footnotes to your pipeline table indicate that the Phase 1 clinical trials for ENCORE 602, ENCORE 603 and NCI-9844 are "still in the planning phase" and that "an IND has not yet been filed" for these product candidates. Accordingly, you should revise your pipeline table on this page and the corresponding table on page 3 so that the relevant bars reflecting the stage of development for each of these candidates extend only to the end of the preclinical column. If the trial for NCI-9844 began enrollment in the fourth quarter of 2015, as you indicated it would on page 96, you may leave the bar unchanged but you should revise the accompanying footnote and any other disclosure about this product candidate to reflect the current status of the trial.

Our Development of Entinostat in NSCLC and Melanoma, page 93

2. We note your disclosure on page 93 concerning the serious immune-mediated adverse event experienced by one of three patients in your Phase 1b trial for Entinostat in NSCLC and Melanoma. Please further describe the adverse events experienced and discuss how the subsequent "thorough safety review" resulted in the conclusion that the 3mg dosing was tolerable.

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 Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement, please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Frank Wyman at (202) 551-3648 or Joel Parker at (202) 551-3651 if you have questions regarding comments on the financial statements and related matters. Please contact Scot Foley at (202) 551-3383, Bryan Pitko at (202) 551-3203, or me at (202) 551-3675 with any other questions.

Sincerely,

/s/ *Bryan J. Pitko* for

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Laura A. Berezin
Jaime L. Chase
Hogan Lovells US LLP
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Menlo Park, California 94025