



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4631

November 16, 2017

Via E-Mail

Dr. Oliver P. Peoples
President & Chief Executive Officer
Yield10 Bioscience, Inc.
19 Presidential Way
Woburn, Massachusetts 01801

**Re: Yield10 Bioscience, Inc.
Registration Statement on Form S-1
Filed November 2, 2017
File No. 333-221283**

Dear Dr. Peoples:

We have limited our review of your registration statement to those issues we have addressed in our comment.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comment applies 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 this comment, we may have additional comments.

Underwriting, page 54

Over-allotment Option, page 56

1. We note your disclosure in this section and on the prospectus cover page that the underwriters have the option to purchase additional shares of common stock and/or warrants to purchase shares of common stock, as opposed to simply purchasing additional Units. Please revise your disclosure to explain under what circumstances the underwriters would decide to make such purchases and how such purchases of common stock and/or warrants would be priced. In addition, please tell us how the over-allotment option comports with the offering of Class A Units and Class B Units being registered on the registration statement.

Dr. Oliver P. Peoples
Yield10 Bioscience, Inc.
November 16, 2017
Page 2

We remind you that the company and its management are responsible for the accuracy and adequacy of their disclosures, notwithstanding any review, comments, action or absence of action by the staff.

Refer to Rules 460 and 461 regarding requests for acceleration. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Please contact Frank Pigott (Staff Attorney) at 202-551-3570 or me at 202-551-3765 with any questions.

Sincerely,

/s/ Pamela Long

Pamela Long
Assistant Director
Office of Manufacturing and
Construction

cc: Megan Gates
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.