



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4631

December 18, 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.
Amendment No. 2 to Registration Statement on Form S-1
Filed December 15, 2017
File No. 333-221283**

Dear Dr. Peoples:

We have reviewed your amended registration statement and have the following 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.

Prospectus cover page

1. Disclosure on your cover page indicates that you are offering 8,400 Series B Units, each comprised of a preferred share convertible into 280 shares of common stock, Series A Warrants exercisable for 280 shares of common stock and Series B Warrants exercisable for 140 shares of common stock. Please revise to clarify how this results in the preferred shares and Series A Warrants being convertible or exercisable for an aggregate of 2,346,369 shares, and the Series B Warrants being exercisable for an aggregate of 1,173,185 shares. Please similarly address the aggregate number of shares underlying all Series A and Series B Warrants, disclosed in the third paragraph of the cover page.
2. Based on footnote 3, we understand that the overallotment for common stock is 15% of the number of shares of common stock underlying the Series A Units plus the number of shares of common stock underlying the Series A Preferred. Please help us understand where the shares for the overallotment are included in the fee table for the

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registration statement. It appears that you have registered an aggregate offering amount of Series A Units that would cover 115% of the 586,592 Units offered on your cover page, if the assumed price per unit is \$3.58. However, the aggregate offering amount of Series B Units (\$8,400,000) does not appear to cover any overallotment if you are offering 8,400 Series B Units at a price of \$1,000 per unit.

3. Please clarify whether the overallotment option for the warrants includes both the Series A and Series B warrants, and similar to our comment above, please tell us where the overallotment option for the warrants is included in the maximum aggregate offering amounts shown for the securities listed in the fee table.

Please contact 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.