

October 2, 2019

Oliver P. Peoples
President and Chief Executive Officer
Yield10 Bioscience, Inc.
19 Presidential Way
Woburn, MA 01801

Re: Yield10 Bioscience, Inc.
Registration Statement on Form S-1
Filed September 9, 2019
File No. 333-233683

Dear Dr. Peoples:

We have limited our review of your registration statement to those issues that we have addressed in our comments. In some of our comments we may ask you to provide us information so that 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 that our comments apply to your facts and circumstances or do not believe that 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.

Registration Statement on Form S-1 filed September 9, 2019

General

1. Please file all non-Rule 430A information and all required exhibits not included in the initial registration statement.

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 before the requested effective date of the registration statement.

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Please contact Edward M. Kelly, Senior Counsel, at (202) 551-3728 or Jay E. Ingram, Legal Branch Chief, at (202) 551-3397 with any questions.

FirstName LastName Oliver P. Peoples
Comapany Name Yield10 Bioscience, Inc.

Sincerely,

Division of

Corporation Finance
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Manufacturing
FirstName LastName

Office of