

**Yield10 Bioscience, Inc.
19 Presidential Way
Woburn, Massachusetts 01801**

July 22, 2024

VIA EDGAR

U.S. Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attn: Nicholas O'Leary

Re: **Yield10 Bioscience, Inc. (the "Company")
Registration Statement on Form S-1, as amended (the "Registration Statement")
File No. 333-278930**

Dear Mr. O'Leary:

Pursuant to Rule 461 under the Securities Act of 1933, as amended, the Company hereby respectfully requests that the effective date for the above-referenced Registration Statement be accelerated to 4:00 p.m., Eastern Time, on July 24, 2024, or as soon as practicable thereafter. The Company's common stock is currently traded on the over-the-counter market and quoted on the OTC QB market under the symbol "YTEN" <https://www.otcm Markets.com/stock/YTEN/overview>).

Please contact Megan Gates of Covington & Burling LLP at (617) 603-8805 or mgates@cov.com with any questions you may have regarding this request. In addition, please notify Ms. Gates by telephone when this request for acceleration has been granted.

Respectfully,
Yield10 Bioscience, Inc.
By: /s/ Oliver P. Peoples
Name: Oliver P. Peoples
Title: President and Chief Executive Officer

cc: Megan Gates, Covington & Burling LLP