

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

June 4, 2021

Anthony Quinn, M.B Ch.B, Ph.D. Chief Executive Officer Aeglea BioTherapeutics, Inc. 805 Las Cimas Parkway Suite 100 Austin, TX 78746

> Re: Aeglea BioTherapeutics, Inc. Registration Statement on Form S-3 Filed May 28, 2021 File No. 333-256614

Dear Dr. Quinn:

This is to advise you that we have not reviewed and will not review your registration statement.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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.

Please contact Alan Campbell at 202-551-4224 with any questions.

Sincerely,

Division of Corporation Finance Office of Life Sciences

cc: Ryan Mitteness, Esq.