



DIVISION OF  
CORPORATION FINANCE

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

October 20, 2023

Jonathan D. Alspaugh  
President and Chief Financial Officer  
Aeglea BioTherapeutics, Inc.  
221 Crescent Street  
Building 17, Suite 102B  
Waltham, MA 02453

**Re: Aeglea BioTherapeutics, Inc.**  
**Amendment No. 1 to Registration Statement on Form S-1**  
**Filed October 10, 2023**  
**File No. 333-273769**

Dear Jonathan D. Alspaugh:

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

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe a 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 letter, we may have additional comments. Unless we note otherwise, any references to prior comments are to comments in our September 29, 2023 letter.

Amendment No. 1 to Form S-3 on Form S-1

General

1. We note the representation in Section 2.4 of the Agreement and Plan of Merger, filed on June 23, 2023 as exhibit 2.1 to Aeglea's Form 8-K, that Spyre's holders were required to consent to the merger. We further note your Form S-1 seeks to registers the resale of securities issued and issuable to Spyre's security holders as consideration for the merger. Please revise to identify all former affiliates of Spyre reselling pursuant to this Form S-1 as underwriters and fix a selling price for the duration of their offering. See Securities Act Rule 145(c).
2. Please revise to remove all incorporation by reference from the Form S-1 and file a complete prospectus with your amendment. See General Instruction VII.D.1.b to Form S-

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1.

Please contact Dillon Hagius at 202-551-7967 or Laura Crotty at 202-551-7614 with any other questions.

Sincerely,

Division of Corporation Finance  
Office of Life Sciences

cc: Branden C. Berns