

UBS Securities LLC  
299 Park Avenue  
New York, New York 10171

BMO Capital Markets Corp.  
3 Times Square, 26th Floor  
New York, New York 10036

Wells Fargo Securities, LLC  
375 Park Avenue, 4th Floor  
New York, New York 10152

April 4, 2016

Securities and Exchange Commission  
Division of Corporation Finance  
100 F Street, N.E.  
Washington, D.C. 20549

Attn: SuzanneHayes  
Mary Beth Breslin  
Christina Thomas  
Keira Nakada  
Joel Parker

**Re: Aeglea BioTherapeutics, Inc.  
Registration Statement on Form S-1  
Registration File No. 333-205001**

Ladies and Gentlemen:

In accordance with Rule 461 under the Securities Act of 1933, as amended (the “**Act**”), we, as representatives of the several underwriters, hereby join in the request of Aeglea BioTherapeutics, Inc. (the “**Company**”) for acceleration of the effective date of the above-named Registration Statement so that it becomes effective at 4:00 PM, Washington, D.C. time, on April 6, 2016, or as soon thereafter as practicable, or at such other time as the Company or its outside counsel, Fenwick & West LLP, request by telephone that such Registration Statement be declared effective.

Pursuant to Rule 460 under the Act, we, as representatives of the several underwriters, wish to advise you that we have effected the following distribution of the Company’s Preliminary Prospectus dated March 28, 2016:

- (i) Dates of distribution: March 28, 2016 through the date hereof
- (ii) Number of prospective underwriters to which the preliminary prospectus was furnished: 4
- (iii) Number of prospectuses furnished to investors: approximately 4,243

- 
- (iv) Number of prospectuses distributed to others, including the Company, the Company's counsel, independent accountants, and underwriters' counsel: approximately 80.

We, the undersigned, as representatives of the several underwriters, have complied and will comply, and we have been informed by the participating underwriters that they have complied and will comply, with the requirements of Rule 15c2-8 under the Securities Exchange Act of 1934, as amended.

Very truly yours,

UBS SECURITIES LLC  
BMO CAPITAL MARKETS CORP.  
WELLS FARGO SECURITIES, LLC

Acting severally on behalf of themselves and the  
several Underwriters

By: UBS SECURITIES LLC

By: /s/ Lee Schechter

Name: Lee Schechter  
Title: Executive Director

By: /s/ Matt Schainker

Name: Matt Schainker  
Title: Director

By: BMO CAPITAL MARKETS CORP.

By: /s/ Steven Tuch

Name: Steven Tuch  
Title: Managing Director

By: WELLS FARGO SECURITIES, LLC

By: /s/ David Herman

Name: David Herman  
Title: Director