

DECIPHERA PHARMACEUTICALS, INC.

500 Totten Pond Road
Waltham, MA 02451

VIA EDGAR

September 25, 2017

Suzanne Hayes
Christine Westbrook
Office of Healthcare and Insurance
Division of Corporate Finance
Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549

**RE: Deciphera Pharmaceuticals, Inc.
Registration Statement on Form S-1
File No. 333-220299**

Dear Mesdames:

Pursuant to Rule 461 under the Securities Act of 1933, as amended (the “**Act**”), Deciphera Pharmaceuticals, Inc. (the “**Company**”) hereby requests that the effective date of the above-referenced registration statement (the “**Registration Statement**”) be accelerated to September 27, 2017, at 4:00 p.m., Eastern Time, or as soon thereafter as practicable, unless we or our outside counsel, Goodwin Procter LLP, request by telephone that such Registration Statement be declared effective at some other time. In making this acceleration request, the Company acknowledges that it is aware of its responsibilities under the Act.

Once the Registration Statement is effective, please orally confirm the event with our counsel, Goodwin Procter LLP by calling Sarah Ashfaq at (212) 459-7238. We also respectfully request that a copy of the written order from the Securities and Exchange Commission (the “**Commission**”) verifying the effective time and date of the Registration Statement be sent to our counsel, Goodwin Procter LLP, Attention: Sarah Ashfaq, by facsimile to (212) 937-3719.

If you have any questions regarding this request, please contact Sarah Ashfaq of Goodwin Procter LLP at (212) 459-7238.

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Sincerely,

DECIPHERA PHARMACEUTICALS, INC.

/s/ Michael D. Taylor

Michael D. Taylor, Ph.D.

President and Chief Executive Officer

Thomas P. Kelly, *Deciphera Pharmaceuticals, Inc.*
Edwin M. O'Connor, *Goodwin Procter LLP*
Richard A. Hoffman, *Goodwin Procter LLP*
Richard D. Truesdell, Jr., *Davis Polk & Wardwell LLP*
Marcel R. Fausten, *Davis Polk & Wardwell LLP*