

October 9, 2018

Michael D. Taylor  
President and Chief Executive Officer  
Deciphera Pharmaceuticals, Inc.  
500 Totten Pond Road  
Waltham, MA 02451

Re: Deciphera Pharmaceuticals, Inc.  
Registration Statement on Form S-3  
Filed October 1, 2018  
File No. 333-227638

Dear Dr. Taylor:

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 Christine Westbrook at 202-551-5019 with any questions.

Sincerely,

Division of

Office of

Corporation Finance

Healthcare & Insurance

cc: Edwin O'Connor, Esq.