

aTyr Pharma, Inc.
3545 John Hopkins Court, Suite #250
San Diego, CA 92121

VIA EDGAR

May 4, 2015

United States Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, DC 20549
Attention: Jeffrey P. Riedler, Assistant Director

**Re: aTyr Pharma, Inc.
Acceleration Request for Registration Statement on Form S-1
File No. 333-203272**

Dear Mr. Riedler:

Pursuant to Rule 461 under the Securities Act of 1933, as amended (the “**Act**”), aTyr Pharma, Inc. (the “**Company**”) hereby requests that the effective date and time of the above-referenced registration statement (the “**Registration Statement**”) be accelerated to May 6, 2015, at 4:00 p.m., Eastern Time, or at such later time as the Company or its counsel, Goodwin Procter LLP, may orally request via telephone call to the staff of the Division of Corporation Finance of the Securities and Exchange Commission (the “**Commission**”). Once the Registration Statement is effective, please orally confirm the event with our counsel, Goodwin Procter LLP, by calling Maggie Wong at (415) 733-6071 or Mitzi Chang at (415) 733-6017. We also respectfully request that a copy of the written order from the Commission verifying the effective time and date of the Registration Statement be sent to our counsel, Goodwin Procter LLP, Attention: Mitzi Chang, by facsimile to (415) 384-6006.

In connection with the foregoing, the Company hereby acknowledges the following:

- should the Commission or the staff of the Commission, acting pursuant to delegated authority, declare the Registration Statement effective, it does not foreclose the Commission from taking any action with respect to the Registration Statement;
- the action of the Commission or the staff of the Commission, acting pursuant to delegated authority, in declaring the Registration Statement effective, does not relieve the Company from its full responsibility for the adequacy and accuracy of the disclosure in the Registration Statement; and
- the Company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.
- If you have any questions regarding this request, please contact Maggie Wong or Mitzi Chang of Goodwin Procter LLP at (415) 733-6071 or (415) 733-6017.

Sincerely,

ATYR PHARMA, INC.

/s/ John Mendlein

John Mendlein, Ph.D.

Chief Executive Officer and Executive Chairman

cc: Nancy Krueger (aTyr Pharma, Inc.)
Kingsley Taft (Goodwin Procter LLP)
Maggie Wong (Goodwin Procter LLP)
Mitzi Chang (Goodwin Procter LLP)
Alan Denenberg (Davis Polk & Wardwell LLP)