

May 5, 2015

CONFIDENTIAL

VIA EDGAR AND FEDEX

United States Securities and
Exchange Commission
Washington, D.C. 20459
Attention: Jeffrey P. Riedler
Assistant Director

**Re: aTyr Pharma, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed April 27, 2015
File No. 333-203272**

Ladies and Gentlemen:

This letter is submitted on behalf of aTyr Pharma, Inc. (the “**Company**”) in response to comments contained in the letter dated May 1, 2015 (the “**Letter**”) from Jeffrey P. Riedler, Assistant Director of the Staff (the “**Staff**”) of the Securities and Exchange Commission (the “**Commission**”) to John D. Mendlein, Ph.D., Chief Executive Officer and Executive Chairman of the Company, with respect to Amendment No. 1 to Registration Statement on Form S-1 (the “**Registration Statement**”) that was filed on April 27, 2015. The Company is concurrently submitting Amendment No. 3 to the Registration Statement (the “**Revised Registration Statement**”), including changes in response to the Staff’s comments.

The responses set forth below have been organized in the same manner in which the Commission’s comments were organized in the Letter. Copies of this letter and its attachments will also be provided to Matthew Jones, Bryan Pitko and Mark Brunhofer of the Commission.

Report of Independent Registered Public Accounting Firm, Page F-2
Exhibit 23.1: Consent of Independent Registered Public Accounting Firm

1. *Please have your auditors remove the restrictive language from their report and consent and sign them in the filing for which you request effectiveness.*

RESPONSE: The Company's auditors have removed the restrictive language from their report and consent and have signed them in the filing of the Revised Registration Statement.

If you require additional information, please telephone the undersigned at (415) 733-6071 or Mitzi Chang at (415) 733-6017.

Sincerely,

/s/ Maggie L. Wong

Maggie L. Wong

cc: John D. Mendlein (*aTyr Pharma, Inc.*)
Frederic Chereau (*aTyr Pharma, Inc.*)
Nancy D. Krueger (*aTyr Pharma, Inc.*)
Kingsley L. Taft (*Goodwin Procter LLP*)
Alan F. Denenberg (*Davis Polk & Wardwell LLP*)
Mitzi Chang (*Goodwin Procter LLP*)