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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

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**FORM 8-K**

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**CURRENT REPORT  
Pursuant to Section 13 or 15(d)  
of the Securities Exchange Act of 1934**

**March 19, 2018  
Date of Report (Date of earliest event reported)**

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**ATYR PHARMA, INC.**  
(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction  
of incorporation)

**001-37378**  
(Commission  
File Number)

**20-3435077**  
(IRS Employer  
Identification No.)

**3545 John Hopkins Court, Suite #250  
San Diego, California 92121**

(Address of principal executive offices, including zip code)

**(858) 731-8389**

(Registrant's telephone number, including area code)

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligations of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
  - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
  - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
  - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 or Rule 12b-2 of the Securities Exchange Act of 1934.

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

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**Item 2.02 Results of Operations and Financial Condition.**

On March 19, 2018, aTyr Pharma, Inc. (the “Company”) announced financial results for the year ended December 31, 2017 in the earnings release attached hereto as Exhibit 99.1.

The information under this Item 2.02, including Exhibit 99.1 hereto is being furnished and shall not be deemed “filed” for the purposes of Section 18 of the Securities and Exchange Act of 1934, as amended (the “Exchange Act”), or otherwise subject to the liabilities of that section, nor shall such information be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended or the Exchange Act, except as expressly set forth by specific reference in such filing.

**Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.**

As previously announced, John T. Blake, Senior Vice President, Finance and principal financial and accounting officer of the Company, resigned effective as of the close of business on March 20, 2018 to pursue another opportunity. The Company is currently conducting a search for a replacement financial executive to serve as the Company’s principal financial and accounting officer. During the period of this executive search, Stan Blackburn, age 62, a financial consultant to the Company, will succeed Mr. Blake as the Company’s principal financial and accounting officer, effective immediately upon Mr. Blake’s resignation.

Mr. Blackburn previously served as the Company’s Acting Chief Financial Officer as a consultant from October 2008 to January 2016, as the Company’s principal accounting officer from May 2015 to October 2015 and as the Company’s principal financial officer from May 2015 to January 2016. Mr. Blackburn has provided senior financial consulting services to early stage life science and technology companies through his firm BlackFord Partners, Inc. for over 15 years and as an independent consultant for over 25 years. He worked as a certified public accountant with Arthur Andersen & Company for over nine years. Mr. Blackburn holds a B.S. in accountancy from the University of Illinois.

There are (a) no understandings or arrangements between Mr. Blackburn and any other person pursuant to which he was appointed as principal financial and accounting officer of the Company and (b) Mr. Blackburn has no material interest in any transaction or proposed transaction in which the Company is or is to be a party. Mr. Blackburn has no family relationship with any director or executive officer of the Company.

**Item 9.01 Financial Statements and Exhibits.**

(d) Exhibits.

99.1 [Earnings Press Release of aTyr Pharma, Inc. dated March 19, 2018.](#)

**SIGNATURE**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

**ATYR PHARMA, INC.**

By: /s/ Sanjay S. Shukla  
Sanjay S. Shukla, M.D., M.S.  
President and Chief Executive Officer

Date: March 19, 2018

**IMMEDIATE RELEASE****Contact:****Mark Johnson**

Sr. Director, Investor Relations

mjohnson@atyrpharma.com

858-223-1163

**aTyr Pharma Announces Fourth Quarter and Year-End 2017 Operating Results and Provides Corporate Update***Conference Call Today at 2:00 p.m. PT / 5:00 p.m. ET –*

SAN DIEGO – March 19, 2018 – aTyr Pharma, Inc. (Nasdaq: LIFE), a biotherapeutics company engaged in the discovery and development of innovative medicines based on novel immunological pathways, today announced operating results for the fourth quarter and year ended December 31, 2017.

“We achieved several key milestones in 2017 that will enable the continued development of our ORCA and ATYR1923 programs, and allows us to actively pursue our mission to develop and deliver innovative therapeutics based on our knowledge of novel immunological pathways,” said Sanjay Shukla, M.D., M.S., President and CEO of aTyr Pharma. “These achievements included initiating the development of a panel of antibodies from our ORCA immuno-oncology program, and initiating the first-in-human clinical trial of ATYR1923 for the potential treatment of immune-mediated lung diseases. We look forward to announcing top-line results from the Phase 1 study in healthy volunteers of ATYR1923 in the second quarter of this year, and expect to present and publish additional data in support of ORCA and ATYR1923 as we advance both programs in 2018.”

**Program Highlights**

- In November 2017, aTyr initiated a Phase 1, randomized, double-blind, placebo-controlled study evaluating the safety, tolerability, immunogenicity and pharmacokinetics of intravenous ATYR1923 in healthy volunteers.
  - aTyr expects to announce top-line results from this study in the second quarter of 2018.
- In December 2017, aTyr selected a panel of antibodies for continued preclinical development and initiated CMC activities from its ORCA program.
  - aTyr expects to initiate patient trials as early as 2019.
- In January 2018, aTyr presented data from its ORCA program highlighting the potential importance of Resokine in immuno-oncology at the American Society of Clinical Oncology – Society for Immunotherapy of Cancer (ASCO-SITC) Clinical Immuno-Oncology Symposium in San Francisco.
  - *Identification of Novel Liquid Biopsy Biomarker for Monitoring the Immune Set Point in Both Solid Tumor and Hematological Malignancy Patients*
- In April 2018, aTyr will present additional data on its ORCA program at the upcoming American Association for Cancer Research (AACR) Annual Meeting in Chicago:
  - April 16, 2018: *Circulating levels of Resokine, a soluble modulator of the immune system, are upregulated in both experimental cancer models and in patients across multiple tumor types*

## Corporate Highlights

- In November 2017, aTyr appointed Sanjay Shukla, M.D., M.S., as President and Chief Executive Officer.
- In February 2018, aTyr promoted David J. King, Ph.D. to Chief Scientific Officer and Ashraf Amanullah, Ph.D. to Senior Vice President, Biologics Development and Manufacturing.

## Fourth Quarter 2017 Financial Results

Research and development expenses were \$5.3 million and \$9.1 million for the quarters ended December 31, 2017 and 2016, respectively. The decrease of \$3.8 million was due primarily to a \$1.3 million decrease related to manufacturing costs incurred in support of ATYR1923 clinical studies, a \$1.9 million decrease related to the completion of ATYR1940 clinical studies, a decrease of \$0.9 million related to manufacturing costs incurred in support of ATYR1940 clinical studies in the prior year, a \$0.2 million decrease related to non-cash stock-based compensation, and a \$0.1 million decrease related to discovery research. The decrease was partially offset by an increase related to ATYR1923 Phase 1 clinical study costs of \$0.6 million.

General and administrative expenses were \$5.9 million compared to \$3.4 million for the quarters ended December 31, 2017 and 2016, respectively. The increase was primarily related to non-cash stock-based compensation expense related to executive transitions.

## Full Year 2017 Financial Results

Research and development expenses were \$30.1 million and \$42.8 million for the years ended December 31, 2017 and 2016, respectively. The decrease of \$12.8 million was due primarily to a \$9.6 million decrease related to manufacturing costs incurred in support of ATYR1940, a \$6.7 million decrease related to ATYR1940 clinical trial costs, a \$0.5 million decrease in discovery projects, and a \$0.5 million decrease in non-cash stock-based compensation expense. The decrease was partially offset by an increase of \$1.3 million related to ATYR1923 Phase 1 clinical studies, a \$1.2 million increase related to research and non-clinical development costs incurred for ATYR1923, a \$1.1 million increase related to ORCA pre-clinical and research activities and an increase of \$0.8 million related to manufacturing costs incurred in support of ATYR1923.

General and administrative expenses were \$17.1 million and \$15.1 million for the years ended December 31, 2017 and 2016, respectively. The increase of \$2.0 million was due primarily to a \$2.2 million increase in non-cash stock-based compensation expense related to executive transitions, which was partially offset by a reduction of \$0.2 million in professional fees.

## Financial Guidance

As of December 31, 2017, aTyr had \$85.1 million in cash, cash equivalents and investments and 41.2 million shares of common stock outstanding on an if-converted basis (includes 29.8 million shares of common stock and 11.4 million shares of common stock if converted from Class X Preferred stock).

aTyr expects that its cash, cash equivalents and investments will be sufficient to fund its anticipated operations into the third quarter of 2019.

## Conference Call and Webcast Details

aTyr Pharma will host a conference call and webcast today at 2:00 p.m. Pacific Time / 5:00 p.m. Eastern Time to discuss the results and provide a general corporate update. Interested parties may access the call by dialing toll-free (844) 358-9116 from the US, or (209) 905-5951 internationally and using conference ID 3697758. Links to a live audio webcast and replay may be accessed on the aTyr website events page at: <http://investors.atyrpharma.com/events-and-webcasts>. An audio replay will be available for at least 90 days following the event.

### **About aTyr Pharma**

aTyr Pharma is engaged in the discovery and development of innovative medicines using its knowledge of newly discovered pathways in immunology effected by extracellular tRNA synthetases. To date, aTyr has generated innovative and unique development programs based on its knowledge of extracellular histidyl-tRNA synthetase (HARS), known as the Resokine pathway. aTyr's clinical stage ATYR1923 candidate is an agonist of the Resokine pathway designed to temper immune engagement in interstitial lung diseases. aTyr's preclinical research stage ORCA program, targets a novel, proprietary immuno-oncology pathway using antibodies to enhance the immune response in tumor settings. aTyr has built an intellectual property estate, to protect its pipeline, comprising over 250 issued patents or allowed patent applications that are owned or exclusively licensed, including over 300 potential protein compositions derived from tRNA synthetase genes. For more information, please visit <http://www.atyrpharma.com>.

### **Forward-Looking Statements**

This press release contains forward-looking statements within the meaning of the Private Litigation Reform Act. Forward-looking statements are usually identified by the use of words such as "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "seeks," "should," "will," and variations of such words or similar expressions. We intend these forward-looking statements to be covered by such safe harbor provisions for forward-looking statements and are making this statement for purposes of complying with those safe harbor provisions. These forward-looking statements, including statements regarding the potential therapeutic benefits of ATYR1923 or potential product candidates from our ORCA program, the ability of the Company to successfully advance its pipeline or product candidates, undertake certain development activities (such as clinical trial enrollment and the conduct of clinical trials) and accomplish certain development goals and the timing of such activities and development goals, the timing of our clinical trials, our ability to receive regulatory approvals for, and commercialize, our product candidates and of reporting results from our clinical trials, the scope and strength of our intellectual property portfolio and our projected cash expenditures reflect our current views about our plans, intentions, expectations, strategies and prospects, which are based on the information currently available to us and on assumptions we have made. Although we believe that our plans, intentions, expectations, strategies and prospects as reflected in or suggested by those forward-looking statements are reasonable, we can give no assurance that the plans, intentions, expectations or strategies will be attained or achieved. Furthermore, actual results may differ materially from those described in the forward-looking statements and will be affected by a variety of risks and factors that are beyond our control including, without limitation, risks associated with the discovery, development and regulation of our product candidates, the risk that we may cease or delay preclinical or clinical development activities for any of its existing or future product candidates for a variety of reasons (including difficulties or delays in patient enrollment in planned clinical trials), and the risk that we may not be able to raise the additional funding required for its business and product development plans, as well as those set forth in our most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and in our other SEC filings. Except as required by law, we assume no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

**ATYR PHARMA INC.**  
**Condensed Consolidated Statements of Operations**  
(in thousands, except share and per share data)

	Three Months Ended December 31,		Years Ended December 31,	
	2017	2016	2017	2016
Operating expenses:				
Research and development	\$ 5,310	\$ 9,144	\$ 30,067	\$ 42,846
General and administrative	5,890	3,383	17,078	15,094
Total operating expenses	11,200	12,527	47,145	57,940
Loss from operations	(11,200)	(12,527)	(47,145)	(57,940)
Other income (expense), net	(274)	(59)	(1,062)	65
Loss on extinguishment of debt	—	(29)	—	(29)
Other income (expense)	(274)	(88)	(1,062)	36
Loss before income taxes	(11,474)	(12,615)	(48,207)	(57,904)
Income tax benefit	—	49	—	49
Net loss	\$ (11,474)	\$ (12,566)	\$ (48,207)	\$ (57,855)
Net loss per share, basic and diluted	\$ (0.39)	\$ (0.53)	\$ (1.87)	\$ (2.44)
Weighted average common shares outstanding, basic and diluted	29,768,259	23,716,904	25,799,853	23,681,019

**ATYR PHARMA INC.**  
**Condensed Consolidated Balance Sheets**  
(in thousands)

	December 31, 2017	December 31, 2016
Cash, cash equivalents and available-for-sale investments	\$ 85,119	\$ 76,149
Other assets	1,956	2,954
Property and equipment, net	2,280	1,421
Total assets	\$ 89,355	\$ 80,524
Accounts payable, accrued expenses and other liabilities	\$ 5,379	\$ 8,186
Current portion of long-term loans, net of debt issuance costs and discount	5,012	339
Term loans, net of current portion and debt issuance costs and discount	14,719	9,198
Stockholders' equity	64,245	62,801
Total liabilities and stockholders' equity	\$ 89,355	\$ 80,524