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

FORM 8-K

CURRENT REPORT

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

Date of Report (Date of earliest event reported): November 10, 2021

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

Delaware	**001-37378**	**20-3435077**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

3545 John Hopkins Court, Suite #250 **San Diego, CA**	**92121**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (858) 731-8389

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

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))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	LIFE	The Nasdaq Capital Market

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. ☐

Item 2.02 Results of Operations and Financial Condition.

On November 10, 2021, aTyr Pharma, Inc. issued a press release announcing financial results for the quarter ended September 30, 2021. A copy of the press release is furnished as Exhibit 99.1 to this report and is incorporated herein by reference.

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 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
99.1	Press Release of aTyr Pharma, Inc. dated November 10, 2021.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

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/ Jill M. Broadfoot
Jill M. Broadfoot
Chief Financial Officer

Date: November 10, 2021

IMMEDIATE RELEASE
Contact:
Ashlee Dunston
Director, Investor Relations and Corporate Communications
adunston@atyrpharma.com

aTyr Pharma Announces Third Quarter 2021 Results and Provides Corporate Update

Positive results reported from Phase 1b/2a clinical trial of ATYR1923 in pulmonary sarcoidosis provided proof-of-concept for ATYR1923 and validation for tRNA synthetase biology platform and NRP2 target.

Registrational trial for ATYR1923 in pulmonary sarcoidosis expected to initiate in 2022.

September follow-on common stock offering generated $80 million in net proceeds.

Company to host conference call and webcast today, November 10th, at 5:00 p.m. EST / 2:00 p.m. PST.

SAN DIEGO – November 10, 2021 – aTyr Pharma, Inc. (Nasdaq: LIFE), a biotherapeutics company engaged in the discovery and development of innovative medicines based on novel biological pathways, today announced third quarter 2021 results and provided a corporate update.

“The third quarter was a major inflection point for aTyr; we demonstrated, via clinical proof-of-concept data for ATYR1923, that our novel tRNA synthetase biology platform has the potential to treat serious diseases,” said Sanjay S. Shukla, M.D., M.S., President and Chief Executive Officer of aTyr. “The positive results reported from our Phase 1b/2a study of ATYR1923 in pulmonary sarcoidosis, our initial interstitial lung disease (ILD) indication, suggest that ATYR1923 could be a transformative therapy for patients by reducing steroid burden while improving lung function and measures of sarcoidosis symptoms. We look forward to advancing ATYR1923 to a registrational trial in pulmonary sarcoidosis next year, which will bring us one step closer to delivering a potential new treatment to sarcoidosis patients with clinically meaningful outcomes.”

Third Quarter 2021 and Subsequent Period Highlights

- Reported positive results from a Phase 1b/2a multiple-ascending dose, placebo-controlled study of ATYR1923 in 37 patients with pulmonary sarcoidosis. ATYR1923 was safe and well-tolerated at all doses with no drug-related serious adverse events or signal of immunogenicity. Additionally, the study

demonstrated consistent dose response for ATYR1923 on key efficacy endpoints and improvements compared to placebo, including measures of steroid reduction, lung function, sarcoidosis symptom measures and inflammatory biomarkers. Based on the results of the study, the company expects to initiate a registrational trial in pulmonary sarcoidosis next year. Furthermore, the data support the expansion of the development of ATYR1923 in other forms of ILD, such as connective tissue disease-related ILD and chronic hypersensitivity pneumonitis.

- Announced the presentation of preclinical research demonstrating the effects of ATYR2810, the company's lead anti-Neuropilin-2 (NRP2)/VEGF antibody and IND candidate, on tumor associated macrophages at the 2021 Society for Immunotherapy of Cancer Annual Meeting. Treatment of human triple-negative breast cancer cells with ATYR2810 was shown to modulate key immune cells suppressing T-cell mediated anti-tumor responses in the tumor microenvironment and decrease ZEB1 gene expression, a master transcription factor regulating epithelial-mesenchymal transition, a process that is of great importance in regulating tumor growth, progression and metastatic cascade. These data advance the understanding of ATYR2810's mechanism of action and the process by which it may inhibit tumor progression and disrupt immune invasion and will support clinical development for ATYR2810, including a planned Phase 1 study in cancer next year.
- Appointed Robert W. Ashworth, PhD, as Vice President of Regulatory Affairs. Dr. Ashworth is an industry veteran with more than 35 years of regulatory and drug development experience, including a track record of contributing to the FDA approval of more than 12 new drugs. Dr. Ashworth will serve as a member of the company's executive leadership team, overseeing regulatory affairs functions and strategies.
- Raised net proceeds of $80.6 million through the issuance of 10,781,250 shares of common stock in September 2021 from a public offering of common stock.

Third Quarter 2021 Financial Highlights

- **Cash & Investment Position:** Cash, cash equivalents and investments as of September 30, 2021 were $116.4 million.
- **R&D Expenses:** Research and development expenses were $5.1 million for the third quarter of 2021, which consisted primarily of product development costs for ATYR1923 and ATYR2810 programs.
- **G&A Expenses:** General and administrative expenses were $2.6 million for the third quarter of 2021.
- **Shares Outstanding:** Commons shares outstanding were 27,790,677 as of September 30, 2021.

Conference Call and Webcast Details

aTyr will host a conference call and webcast today at 5:00 p.m. Eastern Time / 2:00 p.m. Pacific Time to discuss its financial results and provide a 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 9134928. 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 ATYR1923

aTyr is developing ATYR1923 as a potential therapeutic for patients with severe inflammatory lung diseases. ATYR1923, a fusion protein comprised of the immuno-modulatory domain of histidyl-tRNA synthetase fused to the FC region of a human antibody, is a selective modulator of neuropilin-2 that downregulates innate and adaptive immune response in inflammatory disease states. aTyr's lead indication for ATYR1923 is pulmonary sarcoidosis, a major form of interstitial lung disease. Clinical proof-of-concept for ATYR1923 was recently established in a Phase 1b/2a multiple-ascending dose, placebo-controlled study of ATYR1923 in patients with pulmonary sarcoidosis, which demonstrated safety and a consistent dose response and trends of benefit of ATYR1923 compared to placebo on key efficacy endpoints, including steroid reduction, lung function, clinical symptoms and inflammatory biomarkers.

About aTyr

aTyr is a biotherapeutics company engaged in the discovery and development of innovative medicines based on novel biological pathways. aTyr's research and development efforts are concentrated on a newly discovered area of biology, the extracellular functionality and signaling pathways of tRNA synthetases. aTyr has built a global intellectual property estate directed to a potential pipeline of protein compositions derived from 20 tRNA synthetase genes and their extracellular targets. aTyr's primary focus is ATYR1923, a clinical-stage product candidate which binds to the Neuropilin-2 receptor and is designed to down-regulate immune engagement in inflammatory lung diseases. 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 Securities Litigation Reform Act of 1995. 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 include statements regarding the potential therapeutic benefits and applications of ATYR1923, ATYR2810 and our discovery programs; timelines and plans with respect to certain development activities (including the further development of ATYR9123 and ATYR2810 and the timing of future clinical trials) and value to be derived therefrom; and certain development goals. These forward-looking statements also 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 these forward-looking statements, are reasonable, we can give no assurance that the plans, intentions, expectations or strategies will be attained or achieved. All forward-looking statements are based on estimates and assumptions by our management that, although we believe to be reasonable, are inherently uncertain. Furthermore, actual results may differ materially from those described in these forward-looking statements and will be affected by a variety of risks and factors that are beyond our control including, without limitation, the fact that NRP2 and tRNA synthetase biology is not fully understood, uncertainty regarding the COVID-19 pandemic, including the risk of delays in our clinical trials, risks associated with the discovery, development and regulation of our product candidates, including the risk that results from clinical trials or other studies may not support further development, the risk that we may cease or delay preclinical or clinical development activities for any of our existing or future product candidates for a variety of reasons, the fact that our collaboration agreements are subject to early termination, and the risk that we may not be able to raise the additional funding required for our business and product development plans, as well as those risks 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 September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
	(unaudited)			
Revenues:				
License and collaboration agreement revenues	$ —	$ 148	$ —	$ 8,402
Total revenues	—	148	—	8,402
Operating expenses:				
Research and development	5,138	4,616	17,309	12,593
General and administrative	2,590	2,044	8,066	6,780
Total operating expenses	7,728	6,660	25,375	19,373
Loss from operations	(7,728)	(6,512)	(25,375)	(10,971)
Total other income (expense), net	59	(88)	159	(324)
Consolidated net loss	$ (7,669)	$ (6,600)	$ (25,216)	$ (11,295)
Net loss attributable to noncontrolling interest in Pangu BioPharma Limited	2	1	7	3
Net loss attributable to aTyr Pharma, Inc.	$ (7,667)	$ (6,599)	$ (25,209)	$ (11,292)
Net loss per share, basic and diluted	$ (0.42)	$ (0.68)	$ (1.56)	$ (1.31)
Shares used in computing net loss per share, basic and diluted	18,159,231	9,648,534	16,145,351	8,632,972

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

	September 30, 2021	December 31, 2020
	(unaudited)	
Cash, cash equivalents and available-for-sale investments, short-term	$ 116,354	$ 31,689
Other receivables	129	2,039
Property and equipment, net	707	899
Right-of-use assets	1,479	2,083
Prepaid expenses and other assets	5,247	2,016
Total assets	$ 123,916	$ 38,726
Accounts payable, accrued expenses and other liabilities	$ 4,871	$ 5,003
Current portion of operating lease liability	949	861
Long-term operating lease liability, net of current portion	657	1,378
Total stockholders' equity	117,439	31,484
Total liabilities and stockholders' equity	$ 123,916	$ 38,726