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

SCHEDULE 14A INFORMATION

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934
(Amendment No.)

Filed by the Registrant ☐

Filed by a Party other than the Registrant ☐

Check the appropriate box:

☐ Preliminary Proxy Statement

☐ **Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**

☐ Definitive Proxy Statement

☒ Definitive Additional Materials

☐ Soliciting Material Pursuant to §240.14a-12

ATYR PHARMA, INC.
(Name of Registrant as Specified in its Charter)

(Name of Person(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check all boxes that apply):

☐ No fee required

☐ Fee paid previously with preliminary materials

☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11

March 2022

To our stockholders,

2021 was a milestone year for aTyr. With clinical proof-of-concept for our lead therapeutic candidate, efzofitimod (ATYR1923), we are making meaningful progress toward fulfilling our mission to develop a new class of medicines based on our proprietary extracellular tRNA synthetase biology platform.

To recap, we reported positive results from our Phase 1b/2a study of efzofitimod in pulmonary sarcoidosis, our initial interstitial lung disease (ILD) indication, which demonstrated safety, tolerability and consistent dose response for efzofitimod on key efficacy endpoints and improvements compared to placebo, including measures of steroid reduction, lung function, sarcoidosis symptom measures and inflammatory biomarkers. To the best of our knowledge, this is the first randomized, placebo-controlled trial of any therapy for pulmonary sarcoidosis that demonstrates effects on physiologic and quality of life measures concurrent with steroid reduction. These findings suggest that this novel immunomodulator has the potential to be a transformative, disease modifying therapy for patients with this and other fibrotic lung diseases with high unmet need.

Building on the proof-of-concept results, we secured U.S. Food and Drug Administration (FDA) orphan drug designation for efzofitimod for sarcoidosis, which will help support this advancing clinical program and future commercial strategy. We recently met with the FDA in an End-of-Phase 2 meeting to discuss the trial data and subsequent clinical development and path to registration for efzofitimod for pulmonary sarcoidosis, and as a result, we intend to initiate a planned registrational study of efzofitimod in the third quarter of 2022. Kyorin Pharmaceuticals, our partner for efzofitimod for ILD in Japan, will be an important part of this worldwide study. This partnership has yielded $10 million in total payments thus far and we anticipate tracking towards an additional milestone this year.

In addition, 2021 saw key developments with our next clinical candidate, ATYR2810, an anti-Neuropilin-2 (NRP2)/VEGF antibody. We generated valuable preclinical data demonstrating tumor inhibitory effects in multiple aggressive solid tumor models and gained key mechanistic insights. Manufacturing activities with our partner Lonza remain on track and we expect to initiate a Phase 1 study in cancer patients in the second half of this year.

We are excited by what the recent clinical proof-of-concept for efzofitimod means for the validation of our tRNA synthetase biology platform, which we believe is a major step forward in unlocking the potential of a platform that includes an IP library of over 300 protein compositions patented from all 20 tRNA synthetase gene families. Our first case, as evidenced from the data for efzofitimod, comes from HARS, the synthetase driving our lead clinical program. And through HARS, we found the novel target NRP2, which also forms the backbone of our lead preclinical program with ATYR2810 and other NRP2-targeting antibodies with implications for cancer and inflammation. We have progressed discovery work for two additional tRNA synthetases — AARS and DARS — which demonstrate binding to NK cells, that may be an important therapeutic target in cancer, fibrosis and inflammation.

We are delighted by what we achieved in 2021 supporting our mission and highly anticipate the opportunities we have to advance our clinical and preclinical programs and evolve our industry leading tRNA synthetase platform in 2022.

Sincerely,

Sanjay S. Shukla, M.D., M.S.
President and Chief Executive Officer