aTyr Pharma Announces Expansion of Research Collaboration with The Ohio State University

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Collaboration led by Dr. Elliott Crouser to explore underlying cellular mechanisms of pulmonary sarcoidosis and identify potential sarcoidosis biomarkers.

SAN DIEGO, Aug. 10, 2021 (GLOBE NEWSWIRE) -- aTyr Pharma, Inc. (Nasdaq: LIFE), a clinical stage biotherapeutics company, today announced that the company has expanded its research collaboration with The Ohio State University (OSU) to deepen the understanding of the immune mechanisms of sarcoid granuloma formation and identify potential biomarkers of efficacy for the company's lead therapeutic candidate, ATYR1923, which is currently in clinical development for the treatment of pulmonary sarcoidosis. The research will be conducted in the laboratory of Elliott Crouser, M.D., Professor of Pulmonology, Critical Care and Sleep Medicine at OSU. Dr. Crouser specializes in sarcoidosis research and treatment and will serve as the principal investigator.

The collaboration, which expands upon a successful pilot proof-of-concept study, will assess the effect of ATYR1923 on sarcoid granuloma formation *in vitro* in blood samples taken from sarcoidosis patients. The study will focus on identifying the relevant immune mechanisms triggered in granuloma formation and analyze promising biomarkers predictive of strong granuloma formation in order to assess whether they could be used as predictive biomarkers for treatment selection or treatment response to ATYR1923.

"We look forward to working with aTyr on this important initiative to expand the current understanding of the underlying mechanisms involved in pulmonary sarcoidosis, particularly the formation of granulomas. This work has the potential to identify promising biomarkers that may be used to predict treatment response, including to ATYR1923. Current treatment options for pulmonary sarcoidosis are limited, and the ability to determine a patient population that may benefit from a potential treatment such as ATYR1923 presents the opportunity to take a much-needed step forward in managing this disease," said Dr. Crouser.

"We are very pleased to expand this research collaboration with OSU and Dr. Crouser. This collaboration will build upon the successful findings from research conducted with Dr. Crouser that were recently accepted to be presented at the upcoming European Respiratory Society International Congress in September, which demonstrate the ability of a splice variant of histidyl-tRNA synthetase, the active portion of ATYR1923, to disrupt sarcoid granuloma formation *in vitro* — a hallmark of this debilitating disease," saidSanjay Shukla, M.D., M.S., President and Chief Executive Officer of aTyr. "The research generated from this collaboration may help direct us to biomarkers indicative of a population that may be sensitive to treatment with ATYR1923, which could lead to improved patient outcomes."

Sarcoidosis is an inflammatory disease characterized by the formulation of granulomas, clumps of inflammatory cells, in one or more organs of the body. Sarcoidosis in the lungs is called pulmonary sarcoidosis and occurs in more than 90% of all sarcoidosis patients. Approximately 150,000 to 200,000 Americans live with pulmonary sarcoidosis and the prognosis ranges from benign and self-limiting to chronic, debilitating disease, permanent loss of lung function and death. Current treatment options include corticosteroids and other immunosuppressive therapies, which have limited efficacy and are associated with serious side-effects when used long-term that many patients cannot tolerate.

Dr. Crouser received his medical degree from the Medical College of Ohio at Toledo, OH. He completed an internship, residency and fellowship at The Ohio State University Wexner Medical Center in Columbus, OH. He is board certified in Internal Medicine with subspecialty certifications in Pulmonary Disease and Critical Care. He is a leader in sarcoidosis research and treatment and currently serves as the Chair of the Foundation for Sarcoidosis Research's Scientific Advisory Board. In 25 years, his laboratory has contributed to the publication of more than 100 peer-reviewed manuscripts, including the first clinical practice guidelines for sarcoidosis, which were endorsed by the American Thoracic Society in 2020. Ohio State's Sarcoidosis Specialty Clinic was named a Center of Excellence in 2020 by the World Association of Sarcoidosis and Other Granulomatous Disorders.

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 the innate and adaptive immune response in inflammatory disease states. aTyr has completed enrollment in a proof-of-concept Phase 1b/2a trial evaluating ATYR1923 in patients with pulmonary sarcoidosis. This Phase 1b/2a study is a multi-ascending dose, placebo-controlled, first-in-patient study of ATYR1923 that has been designed to evaluate the safety, tolerability, steroid sparing effect, immunogenicity and pharmacokinetic profile of multiple doses of ATYR1923. Proof-of-mechanism for ATYR1923 was established in a Phase 2 clinical trial in COVID-19 patients with severe respiratory complications, which demonstrated that ATYR1923 reduced inflammatory cytokine levels in patients consistent with preclinical models, including cytokines that are implicated in sarcoidosis and other forms of interstitial lung disease.

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 potential therapeutic benefits and applications of ATYR1923; potential outcomes of the collaboration with The Ohio State University; timelines and plans with respect to certain development activities (such as the timing of data from clinical trials); 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, uncertainty regarding the COVID-19 pandemic, risks associated with the discovery, development and regulation of our product candidates, the risk that we or our partners may cease or delay preclinical or clinical development activities for any of our existing or future product candidates for a variety of reasons (including difficulties or delays in patient enrollment in planned clinical trials), the possibility that existing collaborations could be terminated early, 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.

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