aTyr Pharma Presents Preclinical Research Characterizing Effects of ATYR2810 in Highly Aggressive Tumor Subtypes at the 2022 AACR Annual Meeting

April 11, 2022

Findings suggest that ATYR2810 reduces metastasis and enhances chemosensitivity by downregulating key genes linked to these processes.

SAN DIEGO, April 11, 2022 (GLOBE NEWSWIRE) -- aTyr Pharma, Inc. (Nasdaq: LIFE), a biotherapeutics company engaged in the discovery and development of innovative medicines based on novel biological pathways, today announced a poster presentation at the 2022 American Association for Cancer Research (AACR) Annual Meeting, which is being held April 8 – 13, 2022, in New Orleans, LA, and virtually. The poster and corresponding abstract are available for browsing on the AACR website through July 13, 2022. The poster is also available on the aTyr website.

The poster presents findings from a preclinical study, conducted in collaboration with Dr. Arthur M. Mercurio and his lab at the University of Massachusetts Medical School, characterizing the subtypes of breast cancer that are most responsive to treatment with ATYR2810, a fully humanized monoclonal antibody that selectively and functionally blocks the interaction between neuropilin-2 (NRP2) and VEGF by directly binding at the site of the VEGF binding pocket. Interrogation of ATYR2810 activity in combination with chemotherapy across a panel of breast cancer cells lines using an *in vitro* 3D colony formation assay revealed that highly aggressive and more mesenchymal cell lines associated with metastasis, including triple negative breast cancer (TNBC), were most responsive. Data from both patient derived organoid and patient derived xenograft models from TNBC where ATYR2810 demonstrated anti-tumor activity showed downregulation of key genes known to promote metastasis and drug resistance, including CXCR4 and a set of genes linked to the process of epithelial-mesenchymal transition (EMT). Furthermore, ATYR2810 monotherapy inhibited spontaneous lung metastasis in an experimental model of TNBC, demonstrating the potential therapeutic effects of blocking the NRP2/VEGF signaling axis on preventing tumor persistence.

“Highly aggressive tumors such as TNBC have been shown to have elevated NPR2 expression and are typically treated with resection and chemotherapy, though the potential for metastasis and tumor regrowth, which is thought to be strongly linked to the process of EMT, is high. The ability of ATYR2810 to downregulate genes associated with EMT, reduce metastasis and enhance chemosensitivity in these highly aggressive subtypes of breast cancer provides valuable insight regarding the types of tumors that may benefit from treatment with ATYR2810,” said Leslie A. Nangle, Ph.D., Vice President, Research at aTyr. “These findings suggests that ATYR2810 may serve as a novel therapeutic agent for the treatment of advanced and metastatic cancers. We look forward to advancing ATYR2810 to a Phase 1 study in cancer patients in the second half of the year.”

Details of the poster and corresponding abstract are as follows:

Title: ATYR2810, a fully humanized monoclonal antibody targeting the VEGF-NRP2 pathway sensitizes highly aggressive and chemoresistant TNBC subtypes to chemotherapy
Authors: Zhiwen Xu, Alison G. Barber, Christoph Burkart, Hira Lal Goel, Justin Rahman, Kristina Hamel, Zachary Fogassy, Lisa Eide, Clara Polizzi, Jasmine Stamps, Luke Burman, Kaitlyn Rauch, Ann Menefee, Yanyan Geng, Sofia Klopp Savino, Yeeting E. Chong, Darin Lee, Suzanne Paz, Arthur M. Mercurio, Leslie A. Nangle. aTyr Pharma, University of Massachusetts Chan Medical School, Pangu BioPharma, IAS HKUST - Scripps R&D, Hong Kong University of Science and Technology.
Abstract Control Number: 7998
Session Title: Late-Breaking Research: Experimental and Molecular Therapeutics 1 / Chemistry
Session Date and Time: Monday, April 11, 2022 from 1:30PM – 5:00PM ET
Location: New Orleans Convention Center, Exhibit Halls D – H, Poster Section 16
Poster Board Number: 10
Permanent Abstract Number: LB085

About ATYR2810

aTyr is developing ATYR2810 as a potential therapeutic for certain aggressive tumors where neuropilin-2 (NRP2) is implicated. ATYR2810 is a fully humanized monoclonal antibody that is designed to specifically and functionally block the interaction between NRP2 and one of its primary ligands, VEGF. ATYR2810 is the first Investigational New Drug (IND) candidate to arise from aTyr's in-house research program designing monoclonal antibodies to selectively target the NRP2 receptor and its associated signaling pathways. NRP2 is a cell surface receptor that is highly expressed in certain tumors, in the lymphatic system and on key immune cells implicated in cancer progression. Increased NRP2 expression is associated with worse outcomes in many cancers. Preclinical data suggest that ATYR2810 could be effective against certain types of solid tumors. ATYR2810 is currently undergoing IND-enabling studies.

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 efzofitimod, a clinical-stage product candidate which binds to the neuropilin-2 receptor and is designed to downregulate immune engagement in fibrotic lung disease. 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 NRP2 antibodies, including ATYR2810; timelines and plans with respect to certain development activities; 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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Source: aTyr Pharma, Inc.