aTyr Pharma Provides Mechanistic Update on Resokine Pathway at American Academy of Immunology Annual Meeting

May 2, 2018

– Identification of T Cell Immunomodulatory Domain in Resokine –

SAN DIEGO, May 02, 2018 (GLOBE NEWSWIRE) -- aTyr Pharma, Inc. (Nasdaq:LIFE), a biotherapeutics company engaged in the discovery and development of innovative medicines based on novel immunological pathways, today announced a poster presentation at the American Academy of Immunology (AAI) Annual Meeting in Austin, Texas from May 4 - 8, 2018. The presentation discusses the identification of a T cell immunomodulatory domain in histidyl-tRNA synthetase (HARS).

David King, Ph.D., aTyr's Chief Scientific Officer commented, "The preclinical data presented in this poster highlights a very important understanding of extracellular proteins derived from HARS, which we refer to as Resokine. Specifically, that part of the Resokine molecule, the iMod domain, has immunomodulatory activity and may function as a circulating immune set-point modulator. This information was used to design our ATYR1923 program, in which we have generated an engineered Resokine molecule with a potentially longer duration of action. These data highlight the potential role for ATYR1923 as a therapeutic for immune-mediated diseases, such as interstitial lung disease."

Poster Presentation: Sunday May 6, 2018 from 2:30 – 3:45 PM (CDT)

Title: "*Identification of a T cell Immunomodulatory Domain in Histidyl-tRNA Synthetase"*

Presenter: Elisabeth Mertsching, Ph.D., aTyr Pharma, Inc.

Conclusions:

- ATYR1940 reduced human T cell activation as indicated by lower surface expression of activation markers and decreased release of Th1, Th2, and Th17 cytokines.
- Effects were observed on naïve and effector/memory T cells as well as on CD4+ and CD8+ subsets.
- Gene profiling studies confirmed that ATYR1940 reduced T cell activation and sustained expression of genes that maintain T cells in a resting state.
- The iMod domain of ATYR1940 was responsible for mediating immunomodulatory function.
- The iMod domain and ATYR1923 also reduced T cell activation and cytokine release from stimulated T cells.
- These results suggest that HARS may function as a circulating immune set-point modulator through action by its iMod domain.

About the Resokine Pathway

The Resokine pathway is comprised of extracellular proteins derived from the histidyl tRNA synthetase (HARS) gene family. The gene for HARS gives rise to a number of splice variants, many of which have lost their catalytic activity, but which retain the N-terminal domain of 59 amino acids. This domain was appended to HARS during evolution of multicellular organisms and is not essential for protein synthetic activity but is retained with high homology across mammalian species. Proteins derived from the HARS gene, both full-length and splice variants, are present in human circulation and appear to play a role in modulating immune responses. We refer to the *extracellular* HARS proteins as Resokine, to differentiate them from the *intracellular* enzyme involved in protein synthesis.

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 our product candidates, our ability to successfully advance our pipeline or product candidates, undertake certain development activities (such as clinical trial enrollment and the conduct of clinical trials), accomplish certain development goals the timing of such events and the scope and strength of our intellectual property portfolio 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 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.

Contact:
Mark Johnson
Sr. Director, Investor Relations
mjohnson@atyrpharma.com
858-223-1163

Source: aTyr Pharma, Inc.