aTyr Pharma Presents Analyses of Resolaris Phase 1b/2 Trial in Patients with Limb Girdle Muscular Dystrophy 2B and Facioscapulohumeral Muscular Dystrophy at the American Academy of Neurology 69th Annual Meeting

April 24, 2017

- Resolaris Demonstrated Favorable Safety Profile and Promising Signals of Clinical Activity -

- Resolaris has FDA Fast Track and Orphan Drug Designation for Limb Girdle Muscular Dystrophy 2B (LGMD2B) and Facioscapulohumeral Muscular Dystrophy (FSHD) -

SAN DIEGO – April 24, 2017 – aTyr Pharma, Inc. (Nasdaq: LIFE), a biotherapeutics company engaged in the discovery and development of Physiocrine-based therapeutics to address severe, rare diseases, today announced its participation as part of the Emerging Science Platform Session at the upcoming American Academy of Neurology (AAN) 69th Annual Meeting to be held April 22 – 28, 2017 in Boston, MA.

Details of the session are below:

Emerging Science Platform Session: Tuesday, April 25, 2017 from 5:45 p.m. – 7:15 p.m. (ET)

- **Title:** *Results of a Phase 1b/2 Study of ATYR1940 in Adult Patients with Limb Girdle Muscular Dystrophy Type 2B (LGMD2B) and Facioscapulohumeral Muscular Dystrophy (FSHD) (ATYR1940-C-004)*
- **Author and Presenter:** John Vissing, M.D., Ph.D., Professor of Neurology, University of Copenhagen
- **Supporting Authors:** Attarian S., Gidaro T., Mozaffar T., Iyadurai S., Walker G., Shukla, S., Servais, L., Wagner, K.
- **Location:** Boston Convention and Exhibition Center, 415 Summer St., Boston, MA

The poster presentation provides further detail on the previously announced results from the completed Phase 1b/2 open-label, intra-patient dose escalation 004 trial testing doses of Resolaris (*ATYR1940*) of up to 3.0 mg/kg biweekly in patients with LGMD2B and FSHD. Data from all clinical trials completed to date demonstrate that Resolaris has a favorable safety profile and was generally well-tolerated across all doses tested. There have been no observed signs of general immunosuppression and low-level anti-drug antibody signals did not result in clinical symptoms. 78% of the LGMD2B patients in the trial recorded increases in muscle function at 14 weeks as measured by manual muscle test (MMT) score, a validated assessment tool. 50% of the FSHD patients in the trial recorded increases in muscle function as measured by MMT score.

aTyr believes these data are supportive of further advancement of Resolaris.

About Resolaris™

aTyr Pharma is developing Resolaris as a potential first-in-class intravenous protein therapeutic candidate for the treatment of rare myopathies with an immune component. Resolaris is derived from a naturally occurring protein released by human skeletal muscle cells. aTyr believes Resolaris has the potential to provide therapeutic benefit to patients with rare myopathies with an immune component characterized by excessive immune cell involvement.

About aTyr Pharma

aTyr Pharma is engaged in the discovery and clinical development of innovative medicines for patients suffering from severe, rare diseases using its knowledge of Physiocrine biology, a newly discovered set of physiological pathways. To date, the company has generated three innovative therapeutic candidate programs based on its knowledge of Physiocrine biology in three different therapeutic areas. aTyr has built an intellectual property estate, to protect its pipeline, comprising over 175 issued patents or allowed patent applications that are owned or exclusively licensed, including over 300 potential Physiocrine-based protein compositions. aTyr's key programs are currently focused on severe, rare diseases characterized by immune imbalance for which there are currently limited or no treatment options. 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 and potential therapeutic benefits of Resolaris™, the ability of the Company to successfully

advance its pipeline or product candidates, undertake certain development activities (such as clinical trial enrollment and the conduct of clinical trials) and accomplish certain development goals and the timing of such activities and development goals, the timing of initiation of additional clinical trials, the scope and strength of our intellectual property portfolio, our ability to receive regulatory approvals for, and commercialize, our product candidates and of reporting results from our clinical trials 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 Physiocrine-based product candidates, as well as those set forth in our most recent Annual Report on Form 10-K for the year ended December 31, 2016 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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