Aridis Reports Top-Line Results of the Phase 3 Double-Blinded, Superiority Trial of AR-301 For the Treatment of *Staphylococcus aureus* Ventilator Associated Pneumonia (VAP)

LOS GATOS, Calif., January 25, 2023 /GlobeNewswire/ -- Aridis Pharmaceuticals, Inc. (Nasdaq: ARDS) today announced top-line results from the AR-301-002 Phase 3 study, which evaluated the superiority of adjunctive use of the investigational monoclonal antibody candidate AR-301 with standard of care (SOC) antibiotics versus SOC antibiotics alone, for the treatment of VAP caused by Gram-positive bacteria *Staphylococcus aureus* (*S. aureus*). AR-301-002, the first of two planned Phase 3 studies, enrolled 174 mechanically ventilated intensive care unit (ICU) patients who were likely to have pneumonia caused by *S. aureus*, with 120 of those patients ultimately meeting the criteria of *S. aureus* as the predominant cause of pneumonia (microbiologically evaluable Full Analysis Set [micro-FAS]), being evaluated for efficacy. The COVID-19 pandemic and the subsequent conflict in Eastern Europe limited patient enrollment from the original target sample size of 240.

Key findings:

- Primary outcome measures of efficacy compared clinical cure of AR-301 + SOC vs. SOC alone at Day 21 post-treatment:
  - An improvement in clinical cure rate (or absolute efficacy) of ≥10% (considered a clinically meaningful improvement by many key opinion leaders) was observed with adjunctive use of AR-301. However, with the limited sample size evaluated, statistical significance was not reached for the primary endpoint of clinical cure rate on Day 21 compared to antibiotics alone. Clinical cure at Day 21 was 68.9% (42/61 patients) for AR-301 + SOC versus 57.6% (34/59) for SOC alone, (efficacy difference or absolute efficacy: 11.3%, [p= 0.23]).
- In the prespecified older adult population of 65+ years, the absolute efficacy (improvement in clinical cure rate) on Day 21 was increased to 34% (p= 0.057), and to 38% on Day 28 (p= 0.025). The increase in absolute efficacy was driven primarily by the lower efficacy of SOC antibiotics in older adults 65+ years old compared to adults less than 65 years old (30% vs. 75%, respectively).
- In the methicillin resistant *S. aureus* (MRSA) patients, the absolute efficacy was 28% higher than SOC alone (p=0.774). The increase in absolute efficacy was also driven primarily by the lower efficacy of SOC antibiotics in MRSA patients compared to methicillin susceptible *S. aureus* (MSSA) patients (38% vs. 63%, respectively).
- Treatment with AR-301 was associated with reduction trends in key secondary outcomes measures of duration of hospitalization (median 19 vs. 28 days, difference: 9 days) time

in ICU (median 13 vs. 20 days, difference: 7 days) and mechanical ventilation days (median 6 vs. 8 days, difference: 2 days).

- Consistent positive efficacy trends were observed in favor of AR-301 treatment in other key secondary efficacy outcomes (e.g. clinical cure at days 7, 14, 28).
- Primary outcome measures of safety and tolerability of AR-301 were achieved. AR-301 intravenous (IV) infusion was well tolerated. Adverse Events (AEs) and Serious Adverse Events (SAEs) reported over the 28-day study period for the single IV infusion were similar across the active and placebo treatment groups, with no SAEs deemed drug-related. None of the deaths in the study were deemed drug-related by the blinded investigators. The independent unblinded Data Safety Monitoring Board (DSMB) also did not express any safety concerns. The all-cause mortality rates in all patients were AR-301: 23.6% (21/89) vs. SOC: 18.8% (16/85) (p=0.367); these deaths were primarily associated with patients' underlying conditions which brought the patient into the ICU. The all-cause mortality in the evaluable microFAS population were similar between the AR-301 23.0% (14/61) and placebo 23.7% (14/59) groups (p=0.830). The mortality due to pneumonia was: AR-301 1.6% (1/61) vs SOC 5.0% (3/59) groups among the population with confirmed *S. aureus* pneumonia (p=n.s.).

AR-301-002 is the first of two planned Phase 3 studies evaluating the efficacy and safety of AR-301 for adjunctive treatment of pneumonia caused by *S. aureus* in mechanically ventilated hospitalized patients. Aridis plans to initiate a second Phase 3 study after discussing the current study results with regulatory authorities, including the US FDA and the European Medicines Agency (EMA). The company also plans to present the study findings at a future scientific conference.

"Despite the limitations of sample size and lack of statistical significance in the primary endpoint, we are pleased to see the clinical benefit trends across the study population." said Hasan Jafri, MD, Aridis' Chief Medical Officer. "In particular, this study highlights the efficacy limitations of standard of care antibiotics and therefore the unmet medical needs in high-risk, vulnerable patient populations such as older adults and those infected with antibiotic resistant MRSA; populations where AR-301 has the potential to fulfill an unmet need," said Dr. Jafri.

"The consistency of clinical efficacy trends and the magnitude of clinical response associated with AR-301 treatment are promising. These data suggest the potential benefits of a monoclonal antibody to augment antibiotics and substantially improve outcome in very sick, vulnerable patients such as those in the ICU and older adults," said Dr. Bruno Francois, (Head of the Clinical Investigation Center, University Hospital, Limoges, France), the AR-301-002 study lead clinical investigator and a critical care physician.

Aridis CEO Vu Truong and Dr. Jafri further discuss the Phase 3 study results in a video overview that can be viewed at: https://youtu.be/NNxqY1EkC40.

About AR-301-002 Phase 3 Study

AR-301-002 is the first of two planned Phase 3 studies evaluating the efficacy and safety of AR-301 for adjunctive treatment of VAP caused by *S. aureus*. The study is a randomized, double-blind, superiority trial with the primary efficacy endpoint clinical cure of pneumonia measured at Day 21 post-treatment. A total of 152 clinical sites in 20 countries participated in the study, with enrollment occurring in 45 clinical sites over 40 months. The COVID-19 pandemic and the subsequent conflict in Eastern Europe limited patient enrollment to 174 (original target was 240 enrolled patients), with 120 of those patients ultimately meeting the prespecified criteria of *S. aureus* pneumonia (microbiologically evaluable Full Analysis Set [micro-FAS]). Study subjects across the treatment arms were comparable in terms of baseline demographics, comorbidities, and baseline disease severity measures.

About AR-301

AR-301 is a fully human IgG1 monoclonal antibody that specifically targets *S. aureus* alpha-toxin, an important virulence factor that is secreted by both methicillin-resistant *S. aureus* (MRSA) and methicillin-susceptible *S. aureus* (MSSA). AR-301 is designed to protect against alpha-toxin mediated destruction of host cells, preserving a functional host immune response. AR-301's mode of action is independent of the antibiotic resistance profile of *S. aureus* and it is active against infections caused by both MRSA and MSSA.

***Staphylococcus aureus* Ventilator Associated Pneumonia (VAP)**

VAP poses serious challenges in the hospital setting, as standard of care antibiotics are becoming inadequate in treating infected patients. There are approximately 251,600 cases of hospital acquired pneumonia reported in the U.S. annually caused by *S. aureus* (Decision Resources Group 2016 data base). These patients are typically at high risk of mortality, which is compounded by other life-threatening co-morbidities and rise in antibiotic resistance. Epidemiology studies estimate that the probability of death attributed to *S. aureus* ranges from 29% to 55%. In addition, pneumonia infections can prolong patient stays in ICUs (intensive care units) and the use of mechanical ventilation, creating a major economic burden on patients, hospital systems and payors. For example, ICU cost of care for a ventilated pneumonia patient is approximately $10,000 per day, and the duration of ICU stay is typically twice that of a non-infected ICU patient (Infection Control and Hospital Epidemiology. 2010, vol. 31, pp. 509 515).

About Aridis Pharmaceuticals, Inc.

Aridis Pharmaceuticals, Inc. discovers and develops anti-infectives to be used as add-on treatments to standard-of-care antibiotics.

The Company is advancing multiple clinical stage mAbs targeting bacteria that cause life-threatening infections such as ventilator associated pneumonia (VAP) and hospital acquired pneumonia (HAP), in addition to preclinical stage antiviral mAbs. The use of mAbs as anti-infective treatments represents an innovative therapeutic approach that harnesses the human immune system to fight infections and is designed to overcome the deficiencies associated with the current standard of care which is broad spectrum antibiotics. Such deficiencies include, but are not limited to, increasing drug resistance, short duration of efficacy, disruption of the normal

flora of the human microbiome and lack of differentiation among current treatments. The mAb portfolio is complemented by a non-antibiotic novel mechanism small molecule anti-infective candidate being developed to treat lung infections in cystic fibrosis patients. The Company's pipeline is highlighted below:

Aridis' Pipeline

AR-301 (VAP). AR-301 is a fully human IgG1 mAb targeting gram-positive *Staphylococcus aureus* (*S. aureus)* alpha-toxin and is being evaluated in a global Phase 3 superiority clinical study as an adjunctive treatment of *S. aureus* ventilator associated pneumonia (VAP).

AR-320 (VAP). AR-320 is a fully human IgG1 mAb targeting *S. aureus* alpha-toxin that is being evaluated in a Phase 3 clinical study as a preventative treatment of *S. aureus* colonized mechanically ventilated patients who do not yet have VAP.

AR-501 (cystic fibrosis). AR-501 is an inhaled formulation of gallium citrate with broad-spectrum anti-infective activity being developed to treat chronic lung infections in cystic fibrosis (CF) patients. This program is currently in Phase 2a clinical development in CF patients.

AR-701 (COVID-19). AR-701 is a cocktail of fully human mAbs discovered from convalescent COVID-19 patients that are directed at multiple protein epitopes on the SARS-CoV-2 virus. It is formulated for delivery via intramuscular injection or inhalation using a nebulizer.

AR-401 (blood stream infections). AR-401 is a fully human mAb preclinical program aimed at treating infections caused by gram-negative *Acinetobacter baumannii*.

AR-101 (HAP). AR-101 is a fully human immunoglobulin M, or IgM, mAb in Phase 2 clinical development targeting *Pseudomonas aeruginosa* (*P. aeruginosa)* liposaccharides serotype O11, which accounts for approximately 22% of all *P. aeruginosa* hospital acquired pneumonia cases worldwide.

AR-201 (RSV infection). AR-201 is a fully human IgG1 mAb out-licensed preclinical program aimed at neutralizing diverse clinical isolates of respiratory syncytial virus (RSV).

For additional information on Aridis Pharmaceuticals, please visit https://aridispharma.com/.

Forward-Looking Statements

Certain statements in this press release are forward-looking statements that involve a number of risks and uncertainties. These statements may be identified by the use of words such as "anticipate," "believe," "forecast," "estimated" and "intend" or other similar terms or expressions that concern Aridis' expectations, strategy, plans or intentions. These forward-looking statements are based on Aridis' current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. These factors include, but are not limited to, the need for additional financing, the timing of regulatory submissions, Aridis' ability to obtain and maintain regulatory approval of its existing product candidates and any other product candidates

it may develop, approvals for clinical trials may be delayed or withheld by regulatory agencies, risks relating to the timing and costs of clinical trials, risks associated with obtaining funding from third parties, management and employee operations and execution risks, loss of key personnel, competition, risks related to market acceptance of products, intellectual property risks, risks related to business interruptions, including the outbreak of COVID-19 coronavirus, which could seriously harm our financial condition and increase our costs and expenses, risks associated with the uncertainty of future financial results, Aridis' ability to attract collaborators and partners and risks associated with Aridis' reliance on third party organizations. While the list of factors presented here is considered representative, no such list should be considered to be a complete statement of all potential risks and uncertainties. Unlisted factors may present significant additional obstacles to the realization of forward-looking statements. Actual results could differ materially from those described or implied by such forward-looking statements as a result of various important factors, including, without limitation, market conditions and the factors described under the caption "Risk Factors" in Aridis' 10-K for the year ended December 31, 2021 and Aridis' other filings made with the Securities and Exchange Commission. Forward-looking statements included herein are made as of the date hereof, and Aridis does not undertake any obligation to update publicly such statements to reflect subsequent events or circumstances.

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