ARCA BIOPHARMA ANNOUNCES PHASE 2B GENETIC-AF CLINICAL TRIAL RESULTS SELECTED FOR LATE BREAKING ORAL PRESENTATION AT EUROPEAN SOCIETY OF CARDIOLOGY HEART FAILURE 2018 WORLD CONGRESS

Westminster, CO, May 10, 2018 – ARCA biopharma, Inc. (Nasdaq: ABIO), a biopharmaceutical company applying a precision medicine approach to developing genetically-targeted therapies for cardiovascular diseases, today announced that data from the Phase 2B GENETIC-AF clinical trial has been selected for a "Late Breaking Clinical Trials" oral presentation at the European Society of Cardiology Heart Failure 2018 World Congress being held May 26-29, 2018 in Vienna, Austria. William T. Abraham, M.D., Professor of Medicine, Physiology and Cell Biology and Director, Division of Cardiovascular Medicine at the Ohio State University will present the data.

Presentation Number and Title: #674, "Phase II Trial of Pharmacogenetic Guided Beta-Blocker Therapy with Bucindolol vs. Metoprolol for the Prevention of Atrial Fibrillation/Flutter in Heart Failure: GENETIC-AF"

Session: Late Breaking Trial II – Chronic Heart Failure

Session Date and Time: Sunday, May 27, 2018; 8:30 – 10:00 a.m.

GENETIC-AF Presentation Time: 9:00 a.m.

About GENETIC-AF

A **Gen**otype-Directed Comparative **E**ffectiveness **T**rial of Bucindolol and Toprol-XL for Prevention of Symptomatic **A**trial **F**ibrillation/Atrial Flutter in Patients with Heart Failure

GENETIC-AF was a Phase 2B multi-center, randomized, double-blind, clinical superiority trial comparing the safety and efficacy of Gencaro™ against an active comparator, the beta-blocker Toprol XL (metoprolol succinate) for the treatment and prevention of recurrent atrial fibrillation or flutter (AF/AFL) in heart failure patients with reduced left ventricular ejection fraction (HFrEF). Eligible patients had HFrEF, a history of paroxysmal AF (episodes lasting 7 days or less) or persistent AF (episodes lasting more than 7 days and less than 1 year) in the past 6 months, and the beta-1 389 arginine homozygous genotype that we believe responds most favorably to Gencaro™. A subset of patients in the trial also underwent continuous heart rhythm monitoring to assess AF burden, which is defined as the amount of time per day that a patient experiences AF. Topline results of GENETIC-AF were reported on February 26, 2018.

About ARCA biopharma

ARCA biopharma is dedicated to developing genetically-targeted therapies for cardiovascular diseases through a precision medicine approach to drug development. ARCA's lead product candidate, Gencaro™ (bucindolol hydrochloride), is an investigational, pharmacologically unique beta-blocker and mild vasodilator being developed for the potential treatment of patients with atrial fibrillation (AF) and chronic heart failure with reduced left ventricular ejection fraction (HFrEF) which recently completed a Phase 2B clinical trial. ARCA has identified common genetic variations that it believes predict individual patient response to Gencaro, giving it the potential to be the first genetically-targeted AF prevention treatment. ARCA has a collaboration with Medtronic, Inc. for support of the GENETIC-AF trial. The Gencaro development program has been granted Fast Track designation by FDA. ARCA also plans to develop AB171, a thiol-substituted isosorbide mononitrate, as a potential genetically-targeted treatment for peripheral arterial disease (PAD) and for heart failure (HF). For more information, please visit www.arcabio.com.

Safe Harbor Statement

This press release contains "forward-looking statements" for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements regarding the ability of ARCA's financial resources to support its operations through the end of 2018, potential future development plans for Gencaro, the expected features and characteristics of Gencaro or AB171, including the potential for genetic variations to predict individual patient response to Gencaro, Gencaro's potential to treat AF, AB171's potential to treat HF, future treatment options for patients with AF, and the potential for Gencaro to be the first genetically-targeted AF prevention treatment. Such statements are based on management's current expectations and involve risks and uncertainties. Actual results and performance could differ materially from those projected in the forward-looking statements as a result of many factors, including, without limitation, the risks and uncertainties associated with: ARCA's financial resources and whether they will be sufficient to meet its business objectives and operational requirements; ARCA may not be able to raise sufficient capital on acceptable terms, or at all, to continue development of Gencaro or to otherwise continue operations in the future; results of earlier clinical trials may not be confirmed in future trials; the protection and market exclusivity provided by ARCA's intellectual property; risks related to the drug discovery and the regulatory approval process; and, the impact of competitive products and technological changes. These and other factors are identified and described in more detail in ARCA's filings with the Securities and Exchange Commission, including without limitation ARCA's annual report on Form 10-K for the year ended December 31, 2017, and subsequent filings. ARCA disclaims any intent or obligation to update these forward-looking statements.

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