ARCA biopharma Announces First Patients Enrolled in ASPEN-COVID-19 Phase 2b Clinical Trial Evaluating rNAPc2 (AB201) as a Potential Treatment for COVID-19

- rNAPc2 development focused on unmet need for treatments in hospitalized COVID-19 patients, including after availability of vaccines
- rNAPc2 is the only novel compound being developed for COVID-19 Associated Coagulopathy
- Topline trial data anticipated in the second quarter of 2021
- Data from this development program will also inform potential development in additional RNA virus-associated diseases

Westminster, CO, December 15, 2020 – ARCA biopharma, Inc. (Nasdaq: ABIO), a biopharmaceutical company applying a precision medicine approach to developing genetically targeted therapies for cardiovascular diseases, today announced that the first patients have been enrolled in ASPEN-COVID-19, the Phase 2b clinical trial evaluating rNAPc2 (AB201) as a potential treatment for patients hospitalized with COVID-19. The first patient was enrolled at the University of Colorado Hospital on December 10, 2020, with a total of 5 patients randomized to date. The Company currently anticipates topline trial data from this Phase 2b clinical trial in the second quarter of 2021.

"There is a critical need for safe, efficacious treatments in hospitalized COVID-19 patients, and we believe this need will continue even with potentially effective vaccines available," said Dr. Michael Bristow, ARCA's President and Chief Executive Officer, who is also an American Heart Association (AHA) funded COVID-19 investigator. "We believe rNAPc2's combination of anticoagulant, anti-inflammatory and antiviral effects may favorably impact clinical recovery of patients hospitalized with COVID-19, and we look forward to completing the ASPEN-COVID-19 trial evaluating rNAPc2's potential efficacy in this patient population."

ASPEN-COVID-19 Phase 2b is a randomized, multi-center, international clinical trial evaluating two dose regimens of rNAPc2 versus heparin prescribed per local standard of care in approximately 100 hospitalized SARS-CoV-2 positive patients that also have an elevated D-dimer level. The primary endpoint of the trial is safety and change in D-dimer level from baseline to Day 8 relative to standard of care heparin. D-dimer is a biomarker commonly used for assessing coagulation activation, which is elevated in approximately 50% of hospitalized COVID-19 patients and is directly associated with adverse clinical outcomes.

Dr. Wolfram Ruf, Scientific Director of the Center for Thrombosis and Hemostasis at the Johannes Gutenberg University Medical Center Mainz, Germany, and Professor at Scripps Research, La Jolla, CA, commented, "The clinical course of some patients with COVID-19 is complicated by a virus-triggered coagulopathy that includes thrombotic events and inflammatory processes, thought

to be mediated in part by tissue factor production. Because rNAPc2 is a potent tissue factor inhibitor, it has anticoagulant with anti-inflammatory and antiviral properties. With its properties in modulating the tissue factor pathway, rNAPc2 has the potential to be a uniquely beneficial therapy for patients hospitalized with COVID-19, and potentially other RNA virus associated diseases as well."

Dr. Marc Bonaca MD MPH, Executive Director of CPC Clinical Research and the Director of Vascular Research at the University of Colorado School of Medicine, Aurora, Colorado commented, "Coagulopathy has now been well described as a core malignant feature of COVID-19, as well as other severe viral infections, but we are learning that just simply increasing the intensity of anticoagulation using traditional therapies may not be the optimal approach both for efficacy and for bleeding risk. Targeted inhibition of tissue factor, which plays a key role in the complex interplay of coagulation, inflammation, and infection, holds promise to potentially improve outcomes. The ASPEN-COVID-19 study will provide critical data as to the role of rNAPc2 in this setting as well as other viral and inflammatory conditions characterized by tissue factor mediated coagulopathy."

The U.S. Food and Drug Administration (FDA) has designated the investigation of rNAPc2 as a potential treatment for COVID-19 as a Fast Track development program. ARCA believes that rNAPc2 is the only anticoagulant class new chemical entity in development for COVID-19.

About rNAPc2 (AB201)

rNAPC2 is a small recombinant protein being developed as a potential treatment for RNA virus-associated diseases, initially focusing on COVID-19. rNAPC2 is a potent, selective inhibitor of tissue factor (TF), which has been identified as playing a central role in the inflammatory response to viral infections and in the process of viral dissemination. Its unique mechanism of action gives rNAPC2 a combination of anti-coagulant, anti-inflammatory and anti-viral properties, and therefore the potential to be effective in addressing the impact of viral infections from multiple pathways. rNAPc2 has previously undergone Phase 1 and Phase 2 testing in more than 700 patients, including in clinical studies for prevention of venous and arterial thrombosis, where it showed efficacy in inhibiting the TF pathway and was well tolerated at therapeutic doses. Recent research suggests that the disease syndrome caused by coronavirus may have much in common with other severe infections in which the infection process causes inappropriate activation of the coagulation system and other aspects of the immune response, resulting in serious complications. Recent mechanistic discoveries, as well as prior data from studies in non-human primates (NHPs) given lethal doses of Ebola or Marburg filoviruses demonstrating morbidity and mortality reductions, decreases in inflammatory biomarkers and reduction in viral load, indicate that rNAPC2 may have important antiviral and anti-inflammatory activity in addition to its anticoagulant effects. The Company believes that collectively these observations provide a strong rationale for investigating rNAPC2 as a treatment for COVID-19 and other RNA virus associated diseases.

About ARCA biopharma

ARCA biopharma is dedicated to developing genetically targeted therapies for cardiovascular diseases through a precision medicine approach to drug development. ARCA is developing rNAPc2 as a potential treatment for diseases caused by RNA viruses, initially focusing on COVID-

19. ARCA is also developing Gencaro™ (bucindolol hydrochloride), an investigational, pharmacologically unique beta-blocker and mild vasodilator, as a potential pharmacogenetic treatment for atrial fibrillation in patients with heart failure. For more information, please visit www.arcabio.com or follow the Company on LinkedIn.

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 potential future development plans for rNAPc2 (AB201), the expected features and characteristics of rNAPc2, the anticipated development timeline for rNAPc2, rNAPc2's potential to treat COVID-19, or any other RNA virus associated disease, whether rNAPc2 is the only anticoagulant class new chemical entity in development for COVID-19 Associated Coagulopathy and the potential future treatment options and needs for patients with COVID-19. 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 rNAPc2 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, 2019, and subsequent filings. ARCA disclaims any intent or obligation to update these forward-looking statements.

Investor & Media Contact:
Derek Cole
720.940.2163
derek.cole@arcabio.com

###