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**ARCA BIOPHARMA RECEIVES NOTICE OF ALLOWANCE FOR PATENT FOR
TREATING HEART FAILURE PATIENTS WITH BUCINDOLOL BASED ON
GENETIC TESTING**

Broomfield, CO, January 11, 2010 – ARCA biopharma, Inc. (Nasdaq: ABIO), a biopharmaceutical company developing genetically targeted therapies for heart failure and other cardiovascular diseases, today announced that it has received a Notice of Allowance from the U.S. Patent and Trademark Office (USPTO) for its U.S. Patent Application Number 11/226,908 entitled “Methods for Treatment with Bucindolol Based on Genetic Targeting.” The Notice of Allowance is the USPTO’s official communication that the examination of the patent application has been successfully completed and that a patent will be issued. Once issued, the patent will provide coverage for methods of treating heart failure patients with bucindolol based on genetic testing.

“We are very pleased with the USPTO’s decision to grant this patent which extends our pharmacogenetic intellectual property protection around bucindolol into 2025,” said Michael R. Bristow, President and Chief Executive Officer of ARCA. “This allowance and anticipated issuance of the patent highlight ARCA’s belief in, and commitment to, developing genetically targeted therapies for the treatment of heart failure and other cardiovascular diseases.”

About Gencaro™

Gencaro™ (bucindolol hydrochloride) is a pharmacologically unique beta-blocker and mild vasodilator being developed for the treatment of chronic heart failure (HF). Gencaro is an oral tablet formulation, dosed twice daily. Gencaro is considered part of the beta-blocker class because of its property of blocking beta-1 as well as beta-2 receptors in the heart, preventing these receptors from binding with other molecules that would otherwise activate the receptor. Because of its mild vasodilator effects, the Company believes Gencaro is well-tolerated in patients with advanced HF.

About ARCA biopharma

ARCA biopharma is dedicated to developing genetically-targeted therapies for heart failure and other cardiovascular diseases. The Company's lead product candidate, Gencaro™ (bucindolol hydrochloride), is an investigational, pharmacologically unique beta-blocker and mild vasodilator being developed for heart failure. 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 heart failure treatment. ARCA is collaborating with Laboratory

Corporation of America to develop the companion genetic test for Gencaro. For more information please visit www.arcabiopharma.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 issuance of, and protection provided by, U.S. Patent Application Number 11/226,908 entitled "Methods for Treatment with Bucindolol Based on Genetic Targeting." 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: the Company's financial resources and whether they will be sufficient to meet the Company's business objectives and operational requirements; the protection and market exclusivity provided by the Company'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 SEC, including without limitation the Company's annual report on Form 10-K for the year ended December 31, 2008, the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2009 and subsequent filings. The Company disclaims any intent or obligation to update these forward-looking statements.

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