Idera Pharmaceuticals Presents Mechanism of Action Data on IMO-3100, a Novel Toll-like Receptor Antagonist for Autoimmune Diseases, at Keystone Symposium

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CAMBRIDGE, Mass., Feb 23, 2010 (BUSINESS WIRE) -- Idera Pharmaceuticals, Inc. (Nasdaq: IDRA) today presented data on the mechanism of action of IMO-3100, an antagonist of Toll-like Receptor (TLR) 7 and TLR9, in a preclinical primate model at the Keystone Symposia conference "Tolerance and Autoimmunity" being held February 21-26 in Taos, New Mexico. Idera is developing IMO-3100 for the treatment of autoimmune diseases. The presentation entitled "IMO-3100, a novel antagonist, suppresses TLR7- and TLR9-mediated immune responses in non-human primates" was made by Idera scientists. The data presented showed that subcutaneous administration of IMO-3100 suppressed TLR7- and TLR9-mediated immune responses in primates, reducing production of cytokines such as tumor necrosis factor-alpha (TNF-a), interferon-alpha (IFN-a), IP-10, and IL-6.

"We are very encouraged to have demonstrated the mechanism of action for IMO-3100 in the primate model, and we have incorporated a similar pharmacodynamic evaluation in our Phase 1 clinical trial in addition to safety assessment," said Tim Sullivan, Ph.D., Vice President, Development Programs. "We expect that the pharmacokinetic and pharmacodynamic results from the ongoing rising single-dose clinical trial will facilitate the initiation of subsequent clinical trials of IMO-3100 in autoimmune diseases."

In the studies presented today, the mechanism of action of IMO-3100, which is inhibition of TLR7- and TLR9-mediated immune responses, was evaluated in non-human primates. IMO-3100 was administered to cynomolgus monkeys by subcutaneous injection. Blood samples were taken prior to IMO-3100 administration and at 24-hour intervals through 96 hours after dosing and at one week after dosing, using blood collection sites remote from the injection site. Peripheral blood mononuclear cells (PBMCs) were isolated from the blood samples and cultured in the presence of TLR7 or TLR9 agonists. Cytokines and chemokines in supernatants from the cell cultures were measured by multiplex assay. Cytokine and chemokine induction in PBMC cultures was compared between samples collected prior to and after IMO-3100 dose administration. Results demonstrated that IMO-3100 inhibited induction of cytokines and chemokines, including TNF-a, IFN-a, IP-10, and IL-6. This inhibition was dependent on both the dosage of IMO-3100 administered and the time after administration of IMO-3100. IMO-3100 inhibition was specific to TLR7 and TLR9, with no significant reduction in cytokine levels inducted in PBMCs cultured with TLR4 or TLR8 agonists.

About IMO-3100

IMO-3100 is a DNA-based antagonist of Toll-like Receptor (TLR) 7 and TLR9, and has been shown in preclinical studies to suppress immune responses mediated through TLR7 and TLR9, including induction of IFN-a, TNF-a, IP-10, IL-6, and activation of B cells. Studies from independent researchers have suggested that immune complexes involved in certain autoimmune diseases induce inflammatory responses mediated through TLR7 and TLR9. Blocking these responses using a TLR antagonist represents an innovative approach to the treatment of autoimmune diseases. In preclinical mouse models of autoimmune diseases including lupus, rheumatoid arthritis, and psoriasis, IMO-3100 has shown potent activity in reducing pathologic and immunologic manifestations of disease. Idera continues to evaluate IMO-3100 and other TLR antagonist drug candidates in preclinical models of autoimmune, inflammatory, and hyperlipidemia diseases.

Idera currently is conducting a single-dose, dose-escalation Phase 1 clinical trial of IMO-3100 in healthy subjects. In this trial, IMO-3100 is being administered by subcutaneous injection to healthy subjects, with the primary objective being the evaluation of safety and tolerability. Secondary objectives are to characterize the pharmacokinetic profile of IMO-3100 and to assess the pharmacodynamic mechanism of action through measurement of the *ex vivo* response of PBMCs to TLR7 and TLR9 agonists. The trial is being conducted at a single U.S. site.

The Company plans to use the results from this rising single-dose trial to select dosages for an anticipated follow-up trial in healthy subjects, the purpose of which would be to characterize safety, pharmacokinetics, and *ex vivo* pharmacodynamic mechanism of action with weekly subcutaneous administration for four weeks. The Company intends to apply the data from these two planned Phase 1 trials in identifying an initial autoimmune disease indication for further clinical development of IMO-3100 by the end of 2010.

About Idera Pharmaceuticals, Inc.

Idera Pharmaceuticals develops drug candidates to treat infectious diseases, autoimmune and inflammatory diseases, cancer, and respiratory diseases, and for use as vaccine adjuvants. Our proprietary drug candidates are designed to modulate specific Toll-like Receptors (TLRs), which are a family of immune system receptors that direct immune system responses. Our pioneering DNA and RNA chemistry expertise enables us to create drug candidates for our internal development programs and our partnered programs, and generates opportunities for additional collaborative alliances. For more information, visit www.iderapharma.com.

Idera Forward Looking Statements

This press release contains forward-looking statements concerning Idera Pharmaceuticals, Inc. that involve a number of risks and uncertainties. For this purpose, any statements contained herein that are not statements of historical fact may be deemed to be forward-looking statements. Without limiting the foregoing, the words "believes," "anticipates," "plans," "expects," "estimates," "intends," "should," "could," "will," "may," and similar expressions are intended to identify forward-looking statements. There are a number of important factors that could cause Idera's actual results to differ materially from those indicated by such forward-looking statements, including whether results obtained in preclinical studies such as the preclinical studies referred to in this release will be indicative of results obtained in clinical trials; whether products based on Idera's technology will

advance into or through the clinical trial process on a timely basis or at all and receive approval from the United States Food and Drug Administration or equivalent foreign regulatory agencies; whether, if the Company's products receive approval, they will be successfully distributed and marketed; whether the Company's collaborations with Merck KGaA and an affiliate of Merck & Co., Inc. will be successful; whether the patents and patent applications owned or licensed by the Company will protect the Company's technology and prevent others from infringing it; whether Idera's cash resources will be sufficient to fund the Company's operations; and such other important factors as are set forth under the caption "Risk Factors" in Idera's Quarterly Report on Form 10-Q for the three months ended September 30, 2009, which important factors are incorporated herein by reference. Idera disclaims any intention or obligation to update any forward-looking statements.

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