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Sunesis Announces Publication of Nonclinical Data Demonstrating Activity of Vosaroxin Alone and in Combination with Cytarabine in Patients' Acute Myeloid Leukemia Blasts

Vosaroxin Activity Retained in Absence of Functional p53, a Key Tumor Suppressing Protein that Confers Resistance to Chemotherapy

SOUTH SAN FRANCISCO, Calif., May 5, 2011 – Sunesis Pharmaceuticals, Inc. (NASDAQ: SNSS) today announced the publication of new nonclinical data by a leading academic group on the Company's lead drug candidate, vosaroxin, in the March 2011 issue of *Haematologica*. The results show vosaroxin's potent cytotoxic activity in primary patient AML blasts *ex vivo* when used alone and synergistic activity when used in combination with cytarabine, the current treatment standard in AML, consistent with prior observations in preclinical models. The studies also extend Sunesis observations in primary breast and ovarian cancer biopsies that vosaroxin remains active in the absence of p53, a tumor suppressing protein associated with resistance to chemotherapy. Sunesis is currently enrolling patients in the VALOR trial, a multinational, randomized, double-blind, placebo-controlled, pivotal Phase 3 clinical trial of vosaroxin in combination with cytarabine in first relapsed or primary refractory AML.

"These data underscore vosaroxin's potent anti-leukemic activity and illustrate how its unique mechanistic and chemical properties may translate into clinical advantages for patients," stated Alan K. Burnett, MD, Department of Hematology, Cardiff University School of Medicine, United Kingdom and senior author of the publication. "The potent single-agent activity, synergistic effects with standard-of-care cytarabine, and activity in the absence of p53 clearly support development of vosaroxin in AML."

"These recently published data support and extend studies previously conducted and published by Sunesis on the effects of vosaroxin in AML blasts and in cell lines. Of particular importance is the observation of synergistic activity of vosaroxin combined with cytarabine in leukemic blasts isolated from AML patients, providing additional evidence in support of this combination now being tested in VALOR," said Judith A. Fox, Ph.D., Vice President of Product and Preclinical Development at Sunesis. "Furthermore, the authors present data showing vosaroxin's ability to mediate apoptosis even in the absence of functional p53, a tumor suppressor protein. Mutations of the p53 gene can occur in AML, particularly in treatment related AML, and correlate with resistance to standard chemotherapy and a poor prognosis."

The investigators evaluated vosaroxin alone in leukemic blasts isolated from 88 newly diagnosed acute myeloid leukemia patients, and in combination with cytarabine in 25 patients. Potent single agent vosaroxin activity was observed, superior to that of cytarabine alone. When the two agents were combined, synergistic activity was seen in 22 of 25 patient samples. This combination was also synergistic in two human promyelocytic leukemia cell lines, NB4 and HL-60. In contrast, cytarabine combined with etoposide, a commonly used topoisomerase II poison with a molecular mechanism and chemical scaffold distinct from vosaroxin, was antagonistic. Vosaroxin was active in the p53-null erythroid leukemic cell line, K562.

The Haematologica article and full, published data set are available online at http://www.haematologica.org/cgi/content/full/96/3/393.

About VALOR

VALOR is a Phase 3, randomized, double-blind, placebo-controlled, pivotal trial in patients with first relapsed or refractory AML. The trial is expected to enroll 450 evaluable patients at approximately 100 leading sites in the U.S., Canada, Europe, Australia and New Zealand. The VALOR trial is currently open for enrollment and patients will be randomized one to one to receive either vosaroxin on days one and four in combination with cytarabine daily for five days, or placebo in combination with cytarabine. Additionally, the VALOR trial employs an innovative, adaptive trial design that allows for a one-time sample size adjustment by the DSMB at the interim analysis to maintain adequate power across a broad range of clinically meaningful and statistically significant survival outcomes. The trial's primary endpoint is overall survival. For more information on the VALOR trial, please visit www.valortrial.com.

About Vosaroxin (Formerly Voreloxin)

Vosaroxin is a first-in-class anticancer quinolone derivative, or AQD, a class of compounds that has not been used previously for the treatment of cancer. Vosaroxin both intercalates DNA and inhibits topoisomerase II, resulting in replication-dependent, site-selective DNA damage, G2 arrest and apoptosis.

About Acute Myeloid Leukemia

AML is a rapidly progressing cancer of the blood characterized by the uncontrolled proliferation of immature blast cells in the bone marrow. The American Cancer Society estimated that 12,330 cases of AML were diagnosed and approximately 9,000 deaths from AML occurred in the U.S. in 2010. Additionally, it is estimated that prevalence of AML is approximately 25,000 in the U.S. AML is generally a disease of older adults, and the median age of a patient diagnosed with AML is about 67 years. AML patients with relapsed or refractory disease and newly diagnosed AML patients over 60 years of age with poor prognostic risk factors typically die within one year, resulting in an acute need for new treatment options for these patients.

About Sunesis Pharmaceuticals

Sunesis is a biopharmaceutical company focused on the development and commercialization of new oncology therapeutics for the treatment of solid and hematologic cancers. Sunesis has built a highly experienced cancer drug development organization committed to advancing its lead product candidate, vosaroxin, in multiple indications to improve the lives of people with cancer. For additional information on Sunesis, please visit www.sunesis.com.

This press release contains forward-looking statements, including statements related to the potential for vosaroxin's clinical activity in AML patients, vosaroxin's potential clinical activity in AML patients with p53 and the synergistic activity of vosaroxin combined with cytarabine. Words such as "extend," "illustrate," "translate," "clearly," "providing," "showing" and similar expressions are intended to identify forward-looking statements. These forward-looking statements are based upon Sunesis' current expectations. Forward-looking statements involve risks and uncertainties. Sunesis' actual results and the timing of events could differ materially from those anticipated in such forward-looking statements as a results of these risks and uncertainties, which include, without limitation, risks related to Sunesis' need for substantial additional funding to complete the development and commercialization of vosaroxin, risks related to Sunesis' ability to raise the capital that it believes to be accessible and is required to fully finance the VALOR trial until its planned unblinding in 2013, the risk that Sunesis' development activities for vosaroxin could be otherwise halted or significantly delayed for various reasons, the risk that Sunesis' clinical studies for vosaroxin may not demonstrate safety or efficacy or lead to regulatory approval, the risk that data to date and trends may not be predictive of future data or results, the risk that Sunesis' nonclinical studies and clinical studies may not satisfy the requirements of the FDA or other regulatory agencies, risks related to the conduct of Sunesis' clinical trials, risks related to the manufacturing of vosaroxin and supply of the active pharmaceutical ingredients required for the conduct of the VALOR trial, the risk of third party opposition to granted patents related to vosaroxin, and the risk that Sunesis' proprietary rights may not adequately protect vosaroxin. These and other risk factors are discussed under "Risk Factors" and elsewhere in Sunesis' Annual Report on Form 10-K for the year ended December 31, 20010 and Sunesis' other filings with the Securities and Exchange Commission. Sunesis expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in the company's expectations with regard thereto or any change in events, conditions or circumstances on which any such statements are based.