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Vosaroxin Review Published in *Expert Opinion on Investigational Drugs*

SOUTH SAN FRANCISCO, Calif., (July 24, 2012) – Sunesis Pharmaceuticals, Inc. (NASDAQ: SNSS) today announced the publication of a peer-reviewed paper in the August 2012 issue of *Expert Opinion on Investigational Drugs* (Volume 21, Number 8) featuring vosaroxin, the Company's lead product candidate currently being evaluated in a Phase 3 trial, the VALOR trial, for the treatment of relapsed or refractory acute myeloid leukemia (AML). The paper, titled "Vosaroxin: a novel antineoplastic quinolone," was written by Jonathan Abbas, MD, and Robert Stuart, MD, of the Medical University of South Carolina, Hollings Cancer Center. The paper provides an in-depth review of the development history of vosaroxin, its mechanism of action, pharmacology, metabolism, as well as preclinical and clinical data to date, and is available online at http://informahealthcare.com/doi/pdf/10.1517/13543784.2012.699038.

Among the findings in the paper, the authors point out: "Vosaroxin is at once both different and familiar. It is unarguably a structurally novel antineoplastic, but its mode of action and ability to be used in combination with cytarabine suggest that it will be easy to adopt in practice. Several unique features make vosaroxin a particularly attractive chemotherapy agent including its resistance to P-glycoprotein-mediated drug efflux and its lack of chemical reactivity, which by not promoting the formation of reactive oxygen species, should minimize adverse effects, most notably cardiotoxicity. Further, single-agent vosaroxin is capable of inducing complete remissions in poor-risk older AML patients with low early mortality, demonstrating its potential in difficult to treat AML populations."

Sunesis is currently evaluating vosaroxin in a pivotal Phase 3, randomized, double-blind, placebo-controlled trial, the VALOR trial, in patients with first relapsed or refractory acute myeloid leukemia (AML). The VALOR trial employs an adaptive trial design that permits a one-time increase in sample size at the interim analysis by its Data and Safety Monitoring Board (DSMB). At the interim analysis, expected in the third quarter of 2012, the DSMB will examine pre-specified efficacy and safety data sets and decide whether to stop the study early for efficacy or futility, continue the study as planned or implement a one-time sample size adjustment of 225 additional evaluable patients.

Sunesis is also participating in a Phase 2/3 randomized, controlled, multicenter trial evaluating novel treatment regimens, including two regimens containing vosaroxin, against low dose cytarabine in elderly AML or high-risk myelodysplastic syndrome (MDS) patients who are not

candidates for intensive chemotherapy. The trial, known as the Less Intensive 1 (LI-1) Trial, is being sponsored by Cardiff University and conducted by the United Kingdom's National Cancer Research Institute Haematological Oncology Study Group under the direction of Professor Alan K. Burnett.

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 more than 110 leading sites in the U.S., Canada, Europe, Australia and New Zealand. The VALOR trial is currently enrolling patients, who are 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 Data and Safety Monitoring Board (DSMB) at the interim analysis to maintain adequate power across a broader range of survival outcomes. The trial's primary endpoint is overall survival. For more information on the VALOR trial, please visit www.valortrial.com.

About Vosaroxin

Vosaroxin is a first-in-class anti-cancer quinolone derivative (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 AML

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 estimates there will be approximately 13,780 new cases of AML and 10,200 deaths from AML in the U.S. in 2012. Additionally, it is estimated that the prevalence of AML across major global markets (U.S., France, Germany, Italy, Spain, United Kingdom, and Japan) is over 50,000. 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 http://www.sunesis.com.

This press release contains forward-looking statements, including statements related to theoccurrence and timing of the DSMB interim analysis, the design, conduct, progress and results of the VALOR trial and other clinical trials, the sufficiency of Sunesis' intellectual property estate and the patent exclusivity period for vosaroxin in the United States and other

jurisdictions, and vosaroxin's effects, efficacy, safety profile and commercial potential as a single agent and in combination with cytarabine. Words such as “suggest,” “should”, “is capable”, “demonstrating”, “expected” 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 result 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 development and commercialization of vosaroxin, the risk that raising funds through lending arrangements may restrict our operations or produce other adverse results, 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, 2011 and Sunesis' other filings with the Securities and Exchange Commission, including Sunesis' Quarterly Report on Form 10-Q for the quarter ended March 31, 2012, when available. 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.