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Sunesis Announces Presentation of Adaptive Study Design for Vosaroxin Phase 3 VALOR Trial in AML at ASCO 2011 Annual Meeting

Mid-2012 Interim Analysis Expected

Sunesis to Host Conference Call Today at 9:00 AM Eastern Time

SOUTH SAN FRANCISCO, Calif., June 6, 2011 – Sunesis Pharmaceuticals, Inc. (NASDAQ: SNSS) today announced the presentation of the adaptive study design for its Phase 3 VALOR trial of vosaroxin in acute myeloid leukemia (AML) at the Trials in Progress Poster Session of the 2011 American Society of Clinical Oncology (ASCO) Annual Meeting in Chicago, Illinois. The poster (Poster #48G), entitled "Adaptive design of VALOR, a phase 3 trial of vosaroxin or placebo in combination with cytarabine for patients with first relapsed or refractory acute myeloid leukemia," is available on the Sunesis website at www.sunesis.com.

VALOR, a Phase 3, multinational, randomized, double-blind, placebo-controlled, pivotal trial, is expected to enroll 450 evaluable patients at leading sites in the U.S., Canada, Europe, Australia and New Zealand. Its adaptive design provides for a single interim analysis by an independent Data and Safety Monitoring Board (DSMB), which will meet to examine pre-specified efficacy and safety data sets and decide whether to implement a one-time sample size adjustment of 225 additional evaluable patients to maintain adequate power across a broad range of clinically meaningful and statistically significant survival outcomes. The interim analysis by the DSMB is expected to take place in mid-2012. Unblinding of the trial is currently expected in 2013. VALOR clinical trial sites have now been opened in all regions (North America, Europe and Australia/New Zealand) with more than 80 sites expected to be open within the next several months.

David Ross, M.D., Consultant Hematologist at Flinders Medical Centre in Bedford Park, South Australia and a VALOR principal investigator commented, “It is frustrating that treatment standards for relapsed AML have not changed appreciably in over 30 years. Our center elected to participate and has recently begun enrolling in the VALOR trial based on its robust design, and vosaroxin’s clinical safety profile and unique chemotype that evades some of the common drug resistance pathways.”

“AML remains a very challenging disease with a significant need for new treatment options, as illustrated by disappointing outcomes of Phase 3 studies presented at this year’s ASCO

meeting," stated Harry Erba, M.D., Ph.D, Associate Professor of Internal Medicine at the University of Michigan and Steering Committee member and principal investigator for the VALOR trial. "What is increasingly clear from these data is that, to show a meaningful improvement in overall survival, a new agent needs to balance improved remission rates that translate into long leukemia free survival, including the opportunity to bridge to potentially curative bone marrow transplants, with low induction mortality. Vosaroxin has the opportunity to become a new treatment standard for relapsed/refractory AML based on its promising Phase 2 profile in a very difficult-to-treat patient population and the adaptive VALOR trial, which is designed to demonstrate a definitive survival benefit across a range of meaningful outcomes."

In a Phase 2 cytarabine/vosaroxin study in first relapsed and primary refractory AML patients, a 29% combined complete remission rate was achieved, including a 25% complete remission rate. These remissions were associated with a median leukemia free survival (LFS, defined as time of complete remission to relapse or death) of 14.5 months. Six patients remain in survival follow-up with an additional five patients having exceeded the protocol-specified two-year maximum follow up period.

For more information on VALOR please visit www.valortrial.com.

Conference Call Information

The Company will host a conference call today, June 6th at 9:00 a.m. Eastern Time. Harry Erba, MD, PhD, Associate Professor, Department of Internal Medicine at the University of Michigan and Executive Officer of the Southwest Oncology Group will join the Sunesis senior management team in a discussion of the VALOR adaptive design. Sunesis' management team will also provide a general corporate update. The call can be accessed by dialing (866) 700-6293 (U.S. and Canada) or (617) 213-8835 (international), and entering passcode 37887935. To access the live audio webcast, or the subsequent archived recording, visit the "Investors and Media - Calendar of Events" section of the Sunesis website at www.sunesis.com. The webcast will be recorded and available for replay on the company's website for two weeks.

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

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 occured 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 design, conduct and results of the VALOR trial, the occurrence and timing of the DSMB interim analysis and vosaroxin's effects, efficacy and safety profile as a single agent and in combination with cytarabine. Words such as "expected," "designed," "promising," "will" 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' Quarterly Report on Form 10-Q for the quarter ended March 31, 2011 and Sunesis' other filings with the Securities and Exchange Commission, including Sunesis' Annual Report on Form 10-K for the year ended December 31, 2010. 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.