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Sunesis Announces Appointment of Dr. Adam R. Craig as Chief Medical Officer

-Eric Bjerkholt Promoted to Executive Vice President, Corporate Development and Finance-
-Steven Ketchum, Senior Vice President, Research and Development, to Transition from Executive to Board Position-

SOUTH SAN FRANCISCO, Calif., February 2, 2012 – Sunesis Pharmaceuticals, Inc. (Nasdaq:SNSS) today announced the appointment of Adam R. Craig, M.B.B.S., Ph.D., M.B.A. to the newly created position of Executive Vice President, Development and Chief Medical Officer, effective March 1, 2012. In this position, Dr. Craig will oversee the ongoing pivotal Phase 3 VALOR trial of vosaroxin in patients with first relapsed or refractory acute myeloid leukemia (AML) and direct Sunesis' global development program. Dr. Craig has over 15 years of experience in hematology, oncology and clinical development, most recently as Chief Medical Officer of ChemGenex, a publicly-traded biotechnology company which was acquired by Cephalon in 2011.

"Dr. Craig's extensive experience in oncology drug development, including direct experience in bringing a hematology drug candidate through late-stage development and filings of a U.S. NDA and European MAA, will be invaluable to Sunesis as we prepare for our future milestones," stated Daniel Swisher, Chief Executive Officer of Sunesis. "We enthusiastically welcome Adam to the team, and look forward to his contributions as we advance the VALOR trial to completion, execute on our regulatory strategies and prepare the market for an anticipated launch of vosaroxin in AML."

As Chief Medical Officer of ChemGenex, Dr. Craig led the development program and regulatory strategies for omacetaxine, an investigational treatment for chronic myeloid leukemia, including serving as the lead presenter and moderator for a 2011 Oncologic Drug Advisory Committee (ODAC) presentation. Before joining ChemGenex in 2007, he was founding Chief Medical Officer at Innovive Pharmaceuticals, Inc., a hematology-focused company. Prior to joining Innovive, Dr. Craig held positions of increasing responsibility at ArQule Inc., Ilex Oncology Inc., and Antisoma plc. Dr. Craig received his medical qualifications from London University, a Ph.D. in molecular medicine from the University of Leeds, and an M.B.A. from the Open Business School in the United Kingdom. Dr. Craig is a member of the Royal College of Pediatrics and Child Health Physicians (UK) and undertook post-graduate training in pediatrics and pediatric oncology. He also currently serves as a member of the Commercialization Review Council for the Cancer Prevention Research Institute of Texas, a $3 billion fund for groundbreaking cancer research and prevention programs and services.

“With a promising activity and safety profile, robust Phase 2 data, a rigorous and well-designed pivotal trial underway and the potential to transform the treatment landscape for AML, vosaroxin represents one of the most exciting candidates in late-stage cancer drug development today,” stated Dr. Craig. “I am extremely pleased to be joining Sunesis at this exciting point in vosaroxin’s development, and I look forward to working closely with the Sunesis team and clinical investigators to build upon the significant momentum in the VALOR trial and bring it to a successful outcome.”

Sunesis also announced today that Eric H. Bjerkholt has been promoted to Executive Vice President, Corporate Development and Finance, Chief Financial Officer, reflecting his significant contributions in the areas of corporate strategy, financial management and fundraising at Sunesis.

Mr. Swisher stated, “Eric has played a significant role in Sunesis’ evolution over the course of his eight year tenure. We are pleased to announce his promotion and continue to value his leadership, particularly as we look ahead to the commercialization of vosaroxin and to the strategic opportunities for leveraging Sunesis’ assets in markets around the world.”

Sunesis also announced that Steven B. Ketchum, Ph.D., will transition in February from his executive role as Senior Vice President, Research and Development, to a member of Sunesis’ Board of Directors, in order to take an executive role at a biopharmaceutical company based closer to his family home in New Jersey. Dr. Ketchum will transfer his executive responsibilities to Dr. Craig, and will continue to support corporate strategy as a Director.

Mr. Swisher continued, “We are indebted to Steve for his many contributions at the executive level, particularly his strong development and regulatory leadership and close collaboration with Dr. Judy Fox, our ongoing Program Leader, in advancing vosaroxin from Phase 2 into a rigorous, pivotal, multi-national Phase 3 trial. I look forward to his continued insights and leadership as a member of our Board. Through strong teamwork and investigator support, the VALOR trial is now recruiting patients at more than 110 sites in 14 countries, and Sunesis is on track to announce the outcome of an interim analysis in the third quarter of this year.”

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 100 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 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.

The VALOR logo is available at http://www.globenewswire.com/newsroom/prs/?pkgid=8774.

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 12,950 new cases of AML and approximately 9,050 deaths from AML in the U.S. in 2011. 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, vosaroxin's efficacy, safety profile and commercial potential as a single agent and in combination with cytarabine, and the results of the planned interim analysis of the VALOR trial and related timing. Words such as “ongoing,” “future,” “advance,” “completion,” “anticipated,” “launch,” “promising,” “robust,” “potential,” “momentum,” “outcome,” “on track,” “look ahead,” and “adequate” 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 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' Quarterly Report on Form 10-Q for the quarter ended September 30, 2011, Sunesis' Annual Report on Form 10-K for the year ended December 31, 2010 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.

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