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Sunesis and Royalty Pharma Announce $25 Million Vosaroxin Royalty Agreement

Design and Execution of VALOR Trial Enable Innovative Financing

SOUTH SAN FRANCISCO, Calif. and NEW YORK, March 29, 2012 – Sunesis Pharmaceuticals (NASDAQ:SNSS) and Royalty Pharma today announced that Royalty Pharma has agreed to pay Sunesis $25 million, under certain circumstances related to the successful development of Sunesis' lead product candidate vosaroxin, to acquire a royalty on future worldwide net sales of vosaroxin.

Sunesis is 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.

Under terms of the agreement, Royalty Pharma will invest $25 million immediately following VALOR's interim analysis if: (a) the study stops early for efficacy, in exchange for a 3.6% participation payment on future net sales; or (b) the one-time sample size increase is being implemented, in exchange for a 6.75% participation payment on future net sales as well as two warrants. In the case when VALOR proceeds to its planned 450 patient enrollment, Royalty Pharma has the option to make a $25 million investment upon the unblinding of the study in exchange for a 3.6% participation payment on future net sales. The warrants issued to Royalty Pharma are exercisable if VALOR's sample size is increased and are each to purchase 1,000,000 shares of Sunesis common stock at an exercise price of $3.48 and $4.64 per share, respectively. Sunesis currently holds all worldwide commercial rights to its vosaroxin product.

"Royalty Pharma has a strong track record of identifying significant commercial opportunities in the pharmaceutical sector. We believe this commitment by Royalty Pharma is a validation of vosaroxin's potential in AML and reflects the significant upside of a positive VALOR trial," stated Daniel Swisher, Chief Executive Officer of Sunesis.

"This innovative transaction will provide us with access to added capital that extends our runway beyond the unblinding of VALOR and enables our team to actively prepare for vosaroxin's

regulatory filings and US commercial launch. It will also allow us to selectively expand our development program and enhance our strategic flexibility on the timing and terms of vosaroxin partnering arrangements outside the US," added Eric Bjerkholt, Executive Vice President, Corporate Development & Finance of Sunesis.

"Sunesis' use of an adaptive trial design offers us an opportunity to invest in this promising biopharmaceutical product candidate on terms that are a win-win for both Sunesis and Royalty Pharma: Sunesis gains access to a flexible, novel financing structure and we are able to invest in vosaroxin at a time when we believe its likelihood of commercial success will be high," said Pablo Legorreta, Chief Executive Officer of Royalty Pharma. "Based on our extensive due diligence, we are impressed with the Sunesis team, the robust preclinical and clinical dataset for vosaroxin, as well as the rigor of the VALOR trial design and implementation. We are pleased to be partnering with Sunesis in this transaction, and believe that this first-in-class compound has the potential to transform the treatment landscape for AML and potentially other cancers."

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 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 were 12,950 new cases of AML and approximately 9,050 deaths from AML in the U.S. in 2011. 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.

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About Royalty Pharma

Royalty Pharma is the industry leader in acquiring royalty interests in marketed and late stage biopharmaceutical products, with royalty interests in 30 approved products (including Abbott's Humira®, Johnson and Johnson's Remicade®, Merck's Januvia®, Gilead's Atripla®, Truvada®, and Emtriva®, Pfizer's Lyrica®, Amgen's Neupogen® and Neulasta®, and Genentech's Rituxan®) valued at over $6 billion. Royalty Pharma has a fifteen year history of providing value to holders of royalty interests, including its $400 million purchase of 80% of Memorial Sloan-Kettering Cancer Center's Neupogen®/Neulasta® royalty, its $700 million acquisition of AstraZeneca's Humira royalty, its $700 million purchase of a portion of Northwestern University's Lyrica royalty, its $650 million purchase of New York University's Remicade royalty, its joint $525 million acquisition with Gilead Sciences of Emory University's emtricitabine royalty interest, and most recently its $609 million acquisition of Astellas Pharma's patent estate and associated royalty stream relating to the use of dipeptidyl peptidase IV (DPP-IV) inhibitors for the treatment of type 2 diabetes.

More information on Royalty Pharma is available at www.royaltypharma.com.

Forward Looking Statements for Sunesis

This press release contains forward-looking statements, including statements related to the exclusivity period for vosaroxin in the United States and other geographies, the design, conduct and results of the VALOR trial, the occurrence and timing of the DSMB interim analysis and whether the conditions to the payment of the $25 million fee from Royalty Pharma will be satisfied in a timely manner. Words such as "will," "provides," "pending," "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 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 finance the development and commercialization of vosaroxin, the risk that raising funds and providing related security interests in our assets 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 and manufacturing may not satisfy the requirements of the FDA or other regulatory agencies, 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" in our Annual Report on Form 10-K for the year ended December 31, 2011 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.