

Lorus Therapeutics Announces Presentation of New Supportive Data for LOR-2040 in Acute Myeloid Leukemia

- *Ohio State University Researchers Present Results from Clinical Sample Analysis at the 100th Annual Meeting of the American Association for Cancer Research (AACR) -*

TORONTO, CANADA, APRIL 22, 2009 – Lorus Therapeutics Inc. (TSX: LOR) (“Lorus”), a biopharmaceutical company specializing in the research and development of pharmaceutical products and technologies for the management of cancer, today announced the presentation by investigators at Ohio State University (OSU) of results for Lorus’ lead clinical drug candidate LOR-2040, formerly known as GTI-2040, at the 100th Annual Meeting of the AACR in Denver, CO, April 18-22, 2009.

The presentation entitled “In vitro-in vivo pharmacodynamic analysis of GTI-2040 combined with Ara-C in acute myeloid leukemia” was presented today. The abstract for the presentation (Abstract Number: 5447) is available online on the AACR website (<http://www.aacr.org>).

In the presentation the study investigators reported their findings on the pharmacodynamics (drug effects) of LOR-2040 in combination with the chemotherapy drug Ara-C in Acute Myeloid Leukemia (AML). The studies were done to provide additional support for this drug combination in the ongoing clinical program with R2-targeted drug LOR-2040, and included analysis of samples from relapsed/refractory AML patients treated with LOR-2040 and high dose Ara-C from a recently completed Phase Ib trial.

The results of the pharmacodynamic studies showed that R2 levels in leukemia cells were decreased following treatment with LOR-2040 alone or in combination with Ara-C that resulted in a significant decrease in levels of intracellular dNTPs, which are the products of R2 activity and the necessary building blocks for the synthesis of DNA and cell growth. Furthermore, analysis of the bone marrow samples from AML patients treated with LOR-2040 and high-dose Ara-C showed that bone marrow samples with reduced levels of dNTPs had higher amounts of Ara-CTP, which is the cytotoxic product of Ara-C.

Based on their findings, the OSU investigators concluded that correlation of pharmacodynamic measures of LOR-2040 and Ara-C may be useful in assessing overall clinical response in AML.

“Our clinical strategy for AML is to combine Ara-C activity with R2 targeting by LOR-2040 to deliver a one-two punch to the cancer”, said Dr. Aiping Young, Lorus’ President and CEO. “We are pleased that the study results by our OSU collaborators support this combination strategy. We believe these findings help to strengthen our clinical program with LOR-2040 in relapsed/refractory AML”.

About LOR-2040

LOR-2040 is an RNA-targeted drug that specifically targets the R2 component of ribonucleotide reductase, which is required for DNA synthesis and cell proliferation. Through downregulation of R2, LOR-2040 has demonstrated strong antitumor and antimetastatic activity in a variety of tumor types in both *in vitro* and *in vivo* models

and is under study in a multiple Phase I/II clinical program, including an advanced Phase II clinical trial with LOR-2040 and high dose Ara-C (HiDAC) in refractory and relapsed Acute Myeloid Leukemia (AML). The R2 target has been described as a malignant determinant that is elevated in a wide range of tumor types, which can cooperate with a variety of cellular cancer causing genes known as oncogenes to enhance tumor growth and metastatic potential.

About Lorus

Lorus is a biopharmaceutical company focused on the research and development of novel therapeutics in cancer. Lorus' goal is to capitalize on its research, preclinical, clinical and regulatory expertise by developing new drug candidates that can be used, either alone, or in combination with other drugs, to successfully manage cancer. Through its own discovery efforts and an acquisition and in-licensing program, Lorus is building a portfolio of promising anticancer drugs. Lorus Therapeutics Inc. is listed on the Toronto Stock Exchange under the symbol LOR.

Forward Looking Statements

This press release may contain forward-looking statements within the meaning of Canadian and U.S. securities laws. Such statements include, but are not limited to, statements relating to: our research program plans, our plans to conduct clinical trials, the successful and timely completion of clinical studies and the regulatory approval process, our ability to fund future research, our plans to obtain partners to assist in the further development of our product candidates, the establishment of corporate alliances, the Company's plans, objectives, expectations and intentions and other statements including words such as "continue", "believe", "plan", "expect", "intend", "will", "should", "may", and other similar expressions. Such statements reflect our current views with respect to future events and are subject to risks and uncertainties and are necessarily based upon a number of estimates and assumptions that, while considered reasonable by us are inherently subject to significant business, economic, competitive, political and social uncertainties and contingencies. Many factors could cause our actual results, performance or achievements to be materially different from any future results, performance, or achievements that may be expressed or implied by such forward-looking statements, including, among others: our ability to continue as a going concern, our ability to repay or refinance the convertible debentures by October 2009; our ability to obtain the capital required for research and operations, the inherent risks in early stage drug development including demonstrating efficacy, development time/cost and the regulatory approval process; the progress of our clinical trials; our ability to find and enter into agreements with potential partners; our ability to attract and retain key personnel; changing market conditions; and other risks detailed from time-to-time in our ongoing quarterly filings, annual information forms, annual reports and annual filings with Canadian securities regulators and the United States Securities and Exchange Commission.

Should one or more of these risks or uncertainties materialize, or should the assumptions set out in the section entitled "Risk Factors" in our Annual Information Form underlying those forward-looking statements prove incorrect, actual results may vary materially from those described herein. These forward-looking statements are made as of the date of this press release and we do not intend, and do not assume any obligation, to update these forward-looking statements, except as required by law. We cannot assure you that such statements will prove to be accurate as actual results and future events could differ materially from those anticipated in such statements. Investors are cautioned that forward-looking

statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

Lorus Therapeutics Inc.'s recent press releases are available through the Company's website at www.lorusthera.com. For Lorus' regulatory filings on SEDAR, please go to www.Sedar.com. For SEDAR filings prior to July 10, 2007 you will find these under the company profile for Global Summit Real Estate Inc. (Old Lorus).

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