Lion Biotechnologies CSO Laszlo Radvanyi Co-authors Study in Clinical Cancer Research

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Research Validates Method for Enhancing Quality and Efficiency of TIL Production

LOS ANGELES, Jan. 12, 2015 (GLOBE NEWSWIRE) -- Lion Biotechnologies, Inc. (LBIO), a biotechnology company that is developing novel cancer immunotherapies based on tumor infiltrating lymphocytes (TIL), today announced that research by chief scientific officer Laszlo Radvanyi, PhD, has been published in *Clinical Cancer Research*. The research, which Dr. Radvanyi conducted at MD Anderson Cancer Center with his former colleagues, validates a groundbreaking method of accelerating the production of TIL, while enhancing their ability to survive and target tumor-specific antigens.

TIL therapy has demonstrated efficacy in the treatment of metastatic melanoma, with objective response rates of up to 50%. This novel form of adoptive cell therapy (ACT) uses TILs that are extracted from the patient's tumor, expanded by billions in a laboratory, and then infused back into the patient.

The new research was based on the recent discovery that most TIL are CD8+ T-cells, with a significant sub-population of them expressing a molecule known as 4-1BB (also called CD137). This molecule, which is expressed on the surface of activated CD8+ T-cells after they recognize specific antigens, sends a co-stimulatory signal that activates the NFkB pathway. Previous studies have shown that the NFkB pathway enhances the survival CD8+ T-cells, as well as their tumor specificity.

In this study, researchers added an agonistic 4-1BB antibody to trigger 4-1BB signaling, along with the growth factor IL-2, during the initial outgrowth of TILs from melanoma tumor fragments. This significantly enhanced the rate of expansion of CD8+ T cells from the tumor fragments, which were also highly enriched for tumor specificity.

"Results of our study indicate that the tumor microenvironment can be manipulated *ex vivo* to accelerate CD8+ T-cell outgrowth, activate the NFkB pathway, and enhance the tumor specificity of the expanded TILs," Dr. Radvanyi said. "This approach offers a practical way to improve the quality of TIL products for ACT by reducing the culture time needed and cost. In addition, it ensures higher tumor specificity of the final TIL product, which may increase clinical response rates. We look forward to applying this novel method as we continue to advance our clinical programs in metastatic melanoma."

"Manipulating the tumor microenvironment *ex vivo* for enhanced expansion of tumor-infiltrating lymphocytes for adoptive cell therapy" was published on the *Clinical Cancer Research* website on December 3, 2014. To view the abstract or full article, click here.

About Lion Biotechnologies

Lion Biotechnologies, Inc. is engaged in the development of T-cells and engineered T-cells for the treatment of various cancers. The company's lead product candidate, LN-144, is a ready-to-infuse, autologous T-cell therapy utilizing tumor-infiltrating lymphocytes (TIL) for the treatment of patients with metastatic melanoma, and is based on a clinical Cooperative Research and Development Agreement with the National Cancer Institute. TIL therapy is also being evaluated in physician-sponsored clinical trials at MD Anderson Cancer Center and the H. Lee Moffitt Cancer Center & Research Institute. For more information, please visit http://www.lionbio.com.

Forward Looking Statements

This press release contains certain forward-looking statements that are subject to a number of risks and uncertainties, including the risks relating to the Company's ability to conduct its Phase 2 clinical trial in metastatic melanoma and to further successfully develop or commercialize the Company's TIL technologies. Additional risks and uncertainties are described in the Company's most recently filed quarterly report on Form 10-Q and annual report on Form 10-K. Except

as permitted by law, the Company undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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