



## OncoCyte Corporation Announces Completion of Multi-Site Clinical Study of Lung Cancer Diagnostic by Collaborators at The Wistar Institute

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### - Final Study Enrollment Exceeds 600 Patients -

ALAMEDA, Calif.–(BUSINESS WIRE)–Oct. 3, 2014– BioTime, Inc. (NYSE MKT: BTX), and its subsidiary OncoCyte Corporation today announced that OncoCyte’s collaborators at The Wistar Institute have completed enrollment of a large, multi-site study evaluating a blood-based lung cancer diagnostic test. OncoCyte previously entered into a Sponsored Research Agreement and a Material Transfer Agreement with The Wistar Institute to collaboratively develop lung cancer diagnostic products approximately one year ago. As part of the clinical study, over 600 blood samples were obtained from patients with a high-risk profile for development of lung cancer at six clinical sites. Enrollment was completed in June with all sites meeting or exceeding their collection goals. Wistar investigators are currently assessing gene expression patterns in blood cells of patients with malignant versus non-malignant lung disease. The analysis of patient data from this study should be completed by the end of October with submission of the study results for publication in a peer-reviewed journal to follow.

The performance of markers tested in the study in determining the presence or the progression of disease in various categories of patients may determine the specific nature of the lung cancer test to be developed and the regulatory approval pathway that OncoCyte will pursue. As part of the Sponsored Research Agreement, OncoCyte has an option to exclusively license any inventions, discoveries or technology developed by Wistar, or by OncoCyte using Wistar technology, in the course of the collaborative research and anticipates exercising this exclusive option if final results of the study are positive.

Wistar investigators, led by Louise Showe, Ph.D., have previously demonstrated the feasibility of detecting early stage lung cancer by taking a snapshot of gene activity in circulating blood cells. Lung cancer remains a primary cause of cancer-related death, in part because there is no effective diagnostic test to screen patients for lung cancer at an early stage. Annual screening for lung cancer in certain high-risk patients was recently recommended by the United States Preventative Services Task Force (USPSTF), an independent panel of experts in primary care and prevention that systematically reviews the [evidence of effectiveness](#) and develops recommendations for clinical preventive services. The Task Force recommended screening using low-dose computed tomography (CT). Although low-dose CT has demonstrated high sensitivity in detecting early-stage lung cancer in large clinical studies, it also has a high false-positive rate of approximately 25%.

“I look forward to continuing our collaboration with the OncoCyte team on the validation of blood-based molecular markers for the diagnosis of cancer. This collaboration has been quite positive for both groups,” said Dr. Showe, a professor in the Molecular and Cellular Oncogenesis program of Wistar’s NCI-

designated Cancer Center. “Our recent completed enrollment of 600-plus patients to this study uses a sample collection system much more amenable to clinical settings than our previous study. The need for more sensitive, cost-effective, and less invasive methods to detect and monitor cancer in humans, particularly in lung cancer is not going away. The present study also expands on the small study we previously reported by further examining changes in peripheral blood signatures after tumor removal to assess the potential to detect early recurrences. Our results also suggest a negative effect on survival linked to a myeloid cell derived gene signature suggesting inhibitory effects of immune suppressor cells, a present topic of great interest. We look forward to expanding our studies through this collaboration in order to detect and monitor this devastating cancer.”

“I have truly been impressed by the level of focus and execution demonstrated by our collaborators at The Wistar Institute over the past year. Dr. Showe and her team have delivered a rigorous clinical study on time while enrolling a greater than expected number of patients. I look forward to our second year of working together during which I believe our focus will shift toward full commercial development of a blood-based lung cancer diagnostic test for use in patients with a high risk for the disease. Large scale screening of this population, estimated to represent at least three million patients per year in the United States, could reduce overall lung cancer mortality through earlier detection. However, the high number of false-positive low dose CT tests could lead to over a billion dollars a year in unnecessary costs to the United States health care system as a result of associated follow-up testing. Physicians, payers, and patients would therefore welcome a simple to use, low-cost, blood-based test that can help guide patient-management decisions by noninvasively ruling out the presence of cancer,” said Joseph Wagner, PhD, OncoCyte’s Chief Executive Officer.

### ***About OncoCyte Corporation***

OncoCyte, a majority-owned subsidiary of BioTime, Inc., is developing novel products for the diagnosis and treatment of cancer in order to improve the quality and length of life of cancer patients. Based on large unmet need, market size, and data generated thus far from patient sample screening, OncoCyte is initially focusing its efforts on developing *PanC-Dx*<sup>™</sup> diagnostic products for use in detecting breast, bladder, and lung cancers. *PanC-Dx*<sup>™</sup> is a class of non-invasive cancer diagnostics based on a proprietary set of cancer markers characterized, in part, by broad gene expression patterns in numerous cancer types. The *PanC-Dx*<sup>™</sup> biomarkers were discovered as a result of ongoing research within OncoCyte and BioTime on the gene expression patterns associated with embryonic development. This research has demonstrated that many of the same genes associated with normal growth during embryonic development are abnormally reactivated by cancer cells. These genes regulate such diverse processes as cell proliferation, cell migration and blood vessel formation. Many of these genes have not been previously associated with cancer. Moreover, expression of a large subset of these genes is conserved across numerous cancer types (e.g. cancers of the breast, colon, ovaries, etc.), suggesting these genes may control fundamental processes during cancer growth and progression. In addition to their potential value in developing diagnostic biomarkers, an understanding of the pattern of expression of these genes may also enable the development of powerful new cancer therapeutics that target rapidly proliferating cancer cells.

### ***About The Wistar Institute***

The Wistar Institute is an international leader in biomedical research with special expertise in cancer research and vaccine development. Founded in 1892 as the first independent nonprofit biomedical research institute in the country, Wistar has long held the prestigious Cancer Center designation from the National Cancer Institute. The Institute works actively to ensure that research advances move from the

laboratory to the clinic as quickly as possible. The Wistar Institute: Today's Discoveries – Tomorrow's Cures. On the Web at [www.wistar.org](http://www.wistar.org).

## **About BioTime**

BioTime is a biotechnology company engaged in research and product development in the field of regenerative medicine. Regenerative medicine refers to therapies based on stem cell technology that are designed to rebuild cell and tissue function lost due to degenerative disease or injury. BioTime's focus is on pluripotent stem cell technology based on human embryonic stem ("hES") cells and induced pluripotent stem ("iPS") cells. hES and iPS cells provide a means of manufacturing every cell type in the human body and therefore show considerable promise for the development of a number of new therapeutic products. BioTime's therapeutic and research products include a wide array of proprietary *PureStem*<sup>®</sup> progenitors, *HyStem*<sup>®</sup> hydrogels, culture media, and differentiation kits. BioTime is developing *Renovia*<sup>™</sup> (a *HyStem*<sup>®</sup> product) as a biocompatible, implantable hyaluronan and collagen-based matrix for cell delivery in human clinical applications, and is planning to initiate a pivotal clinical trial around *Renovia*<sup>™</sup>, in 2014. In addition, BioTime has developed *Hextend*<sup>®</sup>, a blood plasma volume expander for use in surgery, emergency trauma treatment and other applications. *Hextend*<sup>®</sup> is manufactured and distributed in the U.S. by Hospira, Inc. and in South Korea by CJ HealthCare Corporation, under exclusive licensing agreements.

BioTime is also developing stem cell and other products for research, therapeutic, and diagnostic use through its subsidiaries:

- **Asterias Biotherapeutics**, Inc. is developing pluripotent stem-cell based therapies in neurology and oncology, including AST-OPC1 oligodendrocyte progenitor cells in spinal cord injury, multiple sclerosis and stroke, and AST-VAC2, an allogeneic dendritic cell-based cancer vaccine. Asterias trades publicly under the symbol ASTY.
- **BioTime Asia**, Ltd., a Hong Kong company, may offer and sell products for research use for BioTime's ESI BIO Division.
- **Cell Cure Neurosciences** Ltd. is an Israel-based biotechnology company focused on developing stem cell-based therapies for retinal and neurological disorders, including the development of retinal pigment epithelial cells for the treatment of macular degeneration, and treatments for multiple sclerosis.
- **ESI BIO** is the research and product marketing division of BioTime, providing stem cell researchers with products and technologies to enable them to translate their work into the clinic, including *PureStem*<sup>®</sup> progenitors and *HyStem*<sup>®</sup> hydrogels.
- **LifeMap Sciences**, Inc. markets, sells, and distributes *GeneCards*<sup>®</sup>, the leading human gene database, as part of an integrated database suite that also includes the *LifeMap Discovery*<sup>®</sup> database of embryonic development, stem cell research, and regenerative medicine, and *MalaCards*, the human disease database.
- **LifeMap Solutions**, Inc. is a subsidiary of LifeMap Sciences focused on developing mobile health (mHealth) products.
- **OncoCyte** Corporation is developing products and technologies to diagnose and treat cancer, including *PanC-Dx*<sup>™</sup>, with three clinical trials currently underway.
- **OrthoCyte** Corporation is developing therapies to treat orthopedic disorders, diseases and injuries.
- **ReCyte Therapeutics**, Inc. is developing therapies to treat a variety of cardiovascular and related ischemic disorders, as well as products for research using cell reprogramming technology.

BioTime common shares are traded on the NYSE MKT ticker BTX. For more information, please visit [www.biotimeinc.com](http://www.biotimeinc.com) or connect with the company on [Twitter](#), [LinkedIn](#), [Facebook](#), [YouTube](#), and [Google+](#)

## ***Forward-Looking Statements***

Statements pertaining to future financial and/or operating results, future growth in research, technology, clinical development, and potential opportunities for BioTime and its subsidiaries, along with other statements about the future expectations, beliefs, goals, plans, or prospects expressed by management constitute forward-looking statements. Any statements that are not historical fact (including, but not limited to statements that contain words such as “will,” “believes,” “plans,” “anticipates,” “expects,” “estimates”) should also be considered to be forward-looking statements. Forward-looking statements involve risks and uncertainties, including, without limitation, risks inherent in the development and/or commercialization of potential products, uncertainty in the results of clinical trials or regulatory approvals, need and ability to obtain future capital, and maintenance of intellectual property rights. Actual results may differ materially from the results anticipated in these forward-looking statements and as such should be evaluated together with the many uncertainties that affect the business of BioTime and its subsidiaries, particularly those mentioned in the cautionary statements found in BioTime’s Securities and Exchange Commission filings. BioTime disclaims any intent or obligation to update these forward-looking statements.

To receive ongoing OncoCyte corporate communications, please click on the following link to join our email alert list: <http://investors.oncocyte.com/information-request/email-alerts>

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