

## BioTime Reports Isolation of Novel Brain-Associated Cells From Human Embryonic Stem Cells

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ALAMEDA, Calif.--(BUSINESS WIRE)--Dec. 20, 2013-- BioTime, Inc. (NYSE MKT: BTX), a biotechnology company that develops and markets products in the field of regenerative medicine reported today the publication of a peer-reviewed scientific paper on the successful generation of human cells with markers of particular cell types in the human brain, potentially useful in the treatment of neurological diseases such as Alzheimer's disease. The [paper](#) published online (ahead of print) in the journal [Regenerative Medicine](#), characterizes the cells generated from human embryonic stem cells using BioTime's proprietary *PureStem*<sup>™</sup> technology. The study reports that the new cell lines show the potential to become cartilage and bone as well as brain-associated cells such as membranes surrounding the brain called meninges and choroid plexus (the structure in the brain that creates cerebrospinal fluid). These novel expandable and highly purified progenitors have properties that may have a wide array of future applications in the practice of orthopedics and neurology.

In the study titled "Human embryonic stem cell-derived neural crest cells capable of expressing markers of osteochondral or meningeal-choroid plexus differentiation," BioTime scientists published for the first time the unique properties of two cell lines designated E69 and T42 made using the company's *PureStem*<sup>™</sup> technology. *PureStem*<sup>™</sup> allows the scalable expansion of large numbers of desired cell types starting with human embryonic stem cells. The *PureStem*<sup>™</sup> cell lines have the advantage that they have partially committed to become one of the many tissues of the body. An additional competitive feature of *PureStem*<sup>™</sup> relates to the relative ease of producing large quantities of these cells in a highly purified and identified state, potentially leading to improved quality control. The company has produced >200 diverse progenitors of the human body using this technology. The cells described in today's scientific publication are progenitors to tissues of the developing head called "neural crest" cells. BioTime scientists demonstrated in the publication that the cells could be induced to become diverse brain-associated cells by altering the exposure of the cells to specific growth factors. The company has filed for certain patent protection relating to the cells and the methods described in the publication.

BioTime from time to time publishes scientific discoveries, such as those reported today in *Regenerative Medicine*, to accelerate the pace of research and discovery for devastating diseases such as Alzheimer's disease, and to increase awareness of the cell lines in the medical research markets. BioTime's subsidiary ES Cell International offers the cell lines for sale for research use only.

"To our knowledge, this is the first report of the isolation of these important cell types," said Michael D. West, Ph.D., BioTime's Chief Executive Officer. "The purity and scalability of the cells makes it an easy matter for us to distribute them to the research markets. To date, we have published data in the scientific literature relating to 10 of the >200 cell types we have isolated from pluripotent stem cells. We plan to continue to publish on additional cell types in the future."

Authors of today's publication included Hal Sternberg, Jianjie Jiang, Pamela Sim, and Michael D. West of BioTime; Francois Binette of OrthoCyte Corporation; Ariel Rinon, Ron Edgar, and Alina Shitrit of LifeMap Sciences; David Larocca of ReCyte Therapeutics; Jennifer Kidd and Karen B. Chapman of OncoCyte Corporation; and Jeffrey Janus of ES Cell International. Additional information on *PureStem*<sup>™</sup> technology presented by BioTime's CEO, Dr. Michael West, is available on BioTime's web site in its [video update series](#).

### **About BioTime, Inc.**

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> (*aHyStem*<sup>®</sup> product) as a biocompatible, implantable hyaluronan and collagen-based matrix for cell delivery in human clinical applications. 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 CheilJedang 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 a new subsidiary which has acquired the stem cell assets of Geron Corporation, including patents and other intellectual property, biological materials, reagents and equipment for the development of new therapeutic products for regenerative medicine.
- OncoCyte Corporation is developing products and technologies to diagnose and treat cancer.
- Cell Cure Neurosciences Ltd. ("Cell Cure Neurosciences") 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.
- LifeMap Sciences, Inc. ("LifeMap Sciences") 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.
- ES Cell International Pte Ltd., a Singapore private limited company, developed clinical and research grade hES cell lines and plans to market those cell lines and other BioTime research products in over-seas markets as part of BioTime's ESI BIO Division.

- BioTime Asia, Limited, a Hong Kong company, may offer and sell products for research use for BioTime's ESI BIO Division.
- 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.

To receive ongoing BioTime corporate communications, please click on the following link to join our email alert list: <http://news.biotimeinc.com>.

#### ***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.

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