# BIOTIME

## INVESTOR DAY

## HARVARD CLUB

## 投资者大会

ONCOCYTE CORPORATION

ORTHOCYTE CORPORATION

CellCure NeuroSciences Ltd.

RECYTE THERAPEUTICS

ES CELL INTERNATIONAL

LifeMap SCIENCES

BIOTIME ASIA

# BioTime Investor Day

Monday, April 23, 2012

## AGENDA

| | |
|---|---|
| **2:00-2:10 PM** | Registration |
| **2:10-2:15 PM** | Welcome: Alfred D. Kingsley, J.D., LLM (Chairman, BioTime) |
| **2:15-2:35 PM** | Keynote Speaker: Andrew C. von Eschenbach, M.D. (BioTime Board Member and Chairman of Science and Technology Committee; Former Commissioner of U.S. Food and Drug Administration and Former Director of National Cancer Institute) |
| **2:35-2:50 PM** | BioTime, Inc.<br>Michael D. West, Ph.D. (CEO and President, BioTime) |
| **2:50-3:10 PM** | HyStem® family of products - commercialization and near-term revenues<br>William P. Tew, Ph.D. (CCO, BioTime) |
| **3:10-3:30 PM** | CellCure NeuroSciences Ltd.<br>Charles S. Irving, Ph.D. (CEO) |
| **3:30-4:15 PM** | OncoCyte Corp.<br>Joseph Wagner, Ph.D. (CEO), Karen B. Chapman, Ph.D. (Director of Bioinformatics) |
| **4:15-4:30 PM** | Coffee Break |
| **4:30-4:50 PM** | OrthoCyte Corp.<br>Arnold I. Caplan, Ph.D. (CSO) |
| **4:50-5:10 PM** | ReCyte Therapeutics, Inc.<br>Steven Kessler, Ph.D. (Vice President- R&D), Shahin Rafii, M.D. (Weill Cornell Medical College) |
| **5:10-5:30 PM** | LifeMap Sciences, Inc.<br>David Warshawsky, Ph.D. (CEO and President) |
| **5:30-5:45 PM** | BioTime Asia Ltd.<br>David K. Jin, M.D., Ph.D. (CMO, BioTime) |
| **5:45-6:05 PM** | Overview of investment opportunities<br>Peter S. Garcia, MBA (CFO, BioTime) |
| **6:05-6:15 PM** | Closing Remarks: Michael D. West, Ph.D. |
| **6:15-7:30 PM** | Cocktails & hors d'oeuvres |

Click on the blue text to directly go to links of presentations and company websites.

# Keynote Speech:

# Title: "The Payoff for the Investment in the Science of Life"

## Keynote Speaker:

**Dr. Andrew C. von Eschenbach, M.D.** served as Commissioner of the U.S. Food and Drug Administration from September 2005 to January 2009, after he has worked for four years as Director of the National Cancer Institute (NCI) at the National Institutes of Health. At the time of his appointment by President Bush to serve as Director of the NCI, he was President-Elect of the American Cancer Society.

Dr. von Eschenbach entered government service after an outstanding career of over three decades as a physician, surgeon, oncologist and executive; his roles have included serving as Chairman of the Department of Urologic Oncology to Executive Vice President and Chief Academic at the University of Texas MD Anderson Cancer Center in Houston. An internationally renowned cancer specialist and author of more than 300 scientific articles and studies, Dr. von Eschenbach has assumed many leadership roles, including serving as one of the founding members of the National Dialogue on Cancer, and he has received numerous professional awards and honors. In 2006, Dr. von Eschenbach was named one of Time magazine's "100 most influential people to shape the world," and in both 2007 and 2008, he was selected as one of the Modern Healthcare/Modern Physician's "50 Most Powerful Physician Executives in Healthcare."

Currently, Dr. von Eschenbach is the President of Samaritan Health Initiatives, Inc., a health care policy consultancy, and is an Adjunct Professor at University of Texas MD Anderson Cancer Center. He is a board member of BioTime, Inc. and its subsidiary OncoCyte Corporation. He also serves as Chairman of BioTime's Science and Technology Committee.

# 大会主题演讲

# 题目：生命科学领域的投资回报

## 主讲人

安德鲁 · 冯 · 埃申巴赫博士（Andrew C. von Eschenbach, M.D.）曾担任美国国家癌症研究所（NCI）所长，任期4年。随后，自2005年9月至2009年1月期间，担任食品药物管理局（FDA）局长。他被美国总统布什任命为NCI所长时，已被选为美国癌症协会的总裁当选人。

冯 · 埃申巴赫博士在担任政府公职前，有着30余年内科医生，外科医生，肿瘤医师及管理方面的杰出工作生涯。曾担任德州安德逊癌症中心泌尿肿瘤学部门主席，执行副总裁及首席学者，德州安德逊癌症中心位于休斯顿市，是一个以其大量而优秀的临床及研究癌症项目而世界闻名的机构，他是国际著名癌症专家并著有300余篇科学文章和研究作品。冯 · 埃申巴赫博士担任过很多领导岗位，其中包括“国家癌症学对话”的发起人之一。他受到过很多的专业嘉奖和荣誉。2006年，冯. 埃申巴赫博士被时代杂志提名为“改造世界的100位最具影响力人物”之一，2007年和2008年，他被选为“医疗保健业50位最高能力医师高管”之一。

目前，冯 · 埃申巴赫博士是萨玛利安健康公司的总裁，此公司是医疗政策咨询公司；冯 · 埃申巴赫博士是德克萨斯大学安德逊癌症中心的副教授。他还是生物时代（BioTime）及其子公司安克赛特公司(OncoCyte)的董事会成员；亦是生物时代科学技术委员会主席。

**BioTime, Inc. (NYSE/AMEX: BTX)**, headquartered in Alameda, California, is a biotechnology company focused on regenerative medicine and blood plasma volume expanders. Its broad platform of stem cell technologies is developed through subsidiaries focused on specific fields of applications. BioTime develops and markets research products in the field of stem cells and regenerative medicine, including a wide array of proprietary ACTCellerate™ cell lines, culture media, and differentiation kits. BioTime's therapeutic and diagnostic product development strategy is pursued through subsidiaries that focus on specific organ systems and related diseases for which there is a highly unmet medical need. In addition to its stem cell products, BioTime develops blood plasma volume expanders, blood replacement solutions for hypothermic (low-temperature) surgery, and technology for use in surgery, emergency trauma treatment and other applications. BioTime's lead product, Hextend®, is an FDA-approved blood plasma volume expander. Detailed information about BioTime and our subsidiaries (including OncoCyte Corp., OrthoCyte Corp., ReCyte Therapeutics, Inc., CellCure NeuroSciences Ltd., LifeMap Sciences, ES Cell International Pte., Ltd., and BioTime Asia Ltd.) can be found in our website: www.biotimeinc.com.

## Speaker

**Michael D. West, Ph.D.** is President and Chief Executive Officer of BioTime, Inc. He is an internationally renowned pioneer and expert in stem cell research, and has extensive academic and business experience in age-related degenerative diseases, telomerase molecular biology, and human embryonic stem cell research and development. Prior to becoming our Chief Executive Officer, Dr. West served as Chief Executive Officer, President, and Chief Scientific Officer of Advanced Cell Technology, Inc., a company engaged in developing human stem cell technology for use in regenerative medicine. Dr.West also founded Geron Corporation where he initiated and managed programs in telomerase diagnostics, oligonucleotide-based telomerase inhibition as anti-tumor therapy, and the cloning and use of telomerase in telomerase-mediated therapy wherein telomerase is utilized to immortalize human cells. He has organized and managed academic collaborators James Thomson and John Gearhart that led to the first isolation of human embryonic stem and human embryonic germ cells. Dr. West received a B.S. Degree from Rensselaer Polytechnic Institute, an M.S. Degree in Biology from Andrews University, and a Ph.D. from Baylor College of Medicine concentrating on the biology of cellular aging.

## 生物时代公司 (BioTime, Inc.)

生物时代公司（BioTime, Inc.纽约证券交易所股票代码： BTX）总部位于加利佛尼亚的阿拉梅达，它是一家致力于再生医学及 血浆容量扩充剂的生物技术公司。公司广范的干细胞技术平台源于其专注在特定应用领域的各个子公司。生物时代公司开发并销售干细胞及再生医学领域的研究产品，包括大量的专有 ACTCellerate™ 细胞株，培养基，以及分化基。生物时代除了干细胞产品之外，还开发血浆容量扩充剂，低温手术的血液置换解决方案，在外科手术，紧急外伤治疗及其它应用中的技术。生物时代的主打产品Hextend®,是一种血浆容量扩充剂。有关生物时代公司和我们其他的子公司 （包括OncoCyte Corp., OrthoCyte Corp., ReCyte Therapeutics, Inc., CellCure NeuroSciences Ltd., LifeMap Sciences, ES Cell International Pte., Ltd., and BioTime Asia Ltd. ）信息请参见公司网站 www.biotimeinc.com

## 主讲人

迈克 · 韦斯特博士（Michael D. West, Ph.D.）是生物时代的总裁和首席执行官。韦斯特博士是干细胞研究领域中的国际知名先驱者及专家。在与年龄有关的退化性疾病，端粒酶分子生物学，及人胚胎干细胞研究与开发方面有大量的学术及商业经验。在成为我们的CEO之前，韦斯特博士曾在尖端细胞技术公司（Advanced Cell Technology, Inc.）担任首席执行官，总裁及首席科学家，此公司致力于开发用于 再生医学的人体干细胞技术。韦斯 特博士还在加州的门洛帕克市创立了杰龙公司(Geron Corporation)，在此期间他启动并管理了端粒酶诊断项目，抗肿瘤治疗的端粒酶寡核苷酸抑制疗法中端粒酶的克隆与抗衰老应用项目。在韦斯特博士与其学术合作伙伴James Thomson 和 John Gearhart 之间的研究项目中，第一次成功将人胚胎干细胞与人胚胎生殖细胞分离。韦斯特博士在伦斯勒理工学院获得理科学士学位，在安德鲁大学获得生物学硕士学位，並在贝勒医学院专研细胞老化的生物学并获得博士学位。

# HyStem® Family of Products - commercialization and near-term revenues

BioTime's strategy for developing and commercializing therapeutic applications of its HyStem® technology begins with the marketing and sale of its hydogels as laboratory reagents to medical researchers worldwide within the tissue engineering and regenerative medicine arena. HyStem® hydrogels are biocompatible and provide an excellent protective and delivery matrix within which implanted cells can grow, therefore, can be potentially used in cell-based treatments for stroke, cancer, coronary infarct, and adipose stem cell transplant. Our first therapeutic hydrogel product is Renevia®, a biocompatible, resorbable delivery matrix for autologous, minimal manipulated, adipose cell transplant procedures. Restoration of adipose tissue loss associated with traumatic injury, oncologic resection, and other surgical procedures represents a major challenge for plastic and reconstructive surgeons. Renevia® will offer these surgeons a unique biomaterial in which to implant adipose cells to assure their proliferation into 3 dimensional tissue constructs. We are currently pursuing a CE Mark within the European Union for Renevia® as a medical device and subsequently marketing via third party specialty distributors. Once the product is established in the EU and clinical use data available, we will engage the FDA for marketing approval within the U.S. We have also initiated preclinical studies on two other HyStem® formulations.

## Speaker

**William P. Tew, Ph.D.** is BioTime's Chief Commercial Officer. Dr. Tew is an entrepreneurial executive with over 40 years of experience in medical research, life science, biopharmaceuticals and university intellectual property management and technology licensing. Before joining BioTime, Dr. Tew was co-founder, President, and Chief Executive Officer of Glycosan BioSystems, Inc. Dr. Tew previously served as Associate Provost and Assistant Dean for licensing and technology development for the Johns Hopkins University School of Medicine. Dr. Tew also founded Chesapeake Biological Laboratories (CBL), where he served as chairman and CEO, developing and manufacturing bulk pharmaceuticals, parenteral drugs, and medical devices in compliance with FDA regulations.

# HyStem® 系列产品的商业化计划和近期收入

生物时代公司对HyStem® 技术的治疗应用的发展及商业化战略始于其将水凝胶产品作为实验室试剂销售给全球的医学研究者。生物时代已开发了数个独特的水凝胶配方以解决组织工程学和再生医学领域内的特定需求及应用。从数个美国顶级医学机构正在进行的动物研究中获得的数据证实了HyStem® 水凝胶是生物相容的，并可提供优秀的保护矩阵基质，在这种基质里被植入的细胞可以生长。其它研究也已证实了HyStem水凝胶的效益，它可在细胞治疗中风/癌症/冠状动脉梗塞及脂肪干细胞移植的动物模式中作为一种传递基质。生物时代的首个治疗用水凝胶产品是Renevia®,它是一种生物可相容的，可再吸收的传递基质，用于自体的，受最小程度操纵的脂肪细胞移植程序。由外伤，肿瘤切除，和其它外科手术引起的脂肪组织缺失的恢复对于整形外科医生来说是一个重要的挑战。Renevia® 将为这些医生提供一种特有的生物材料，它可植入脂肪细胞以确保它们增殖到三维组织架构。公司目前正在为 Renevia® 作为一种医疗器械申请欧洲CE认证，一旦认证通过，生物时代将通过第三方经销商打入欧洲和全球市场。此产品若在欧洲建立并得到临床应用数据，公司会立即申请美国FDA在美国销售。此外，公司已经发起了另外2个水凝胶配方的临床前研究。

## 主讲人

威廉· 杜威博士（William P. Tew, Ph.D.）是生物时代公司（BioTime）的首席商务官。杜威博士有着40多年的丰富经验，涉及领域包括医学研究，生命科学，生物制药，大学研究所知识产权管理及技术授权。他在生物化学和药理学方面有资深的造诣，并在FDA法规事务及cGMP管理，大宗药品研发制造，注射类药品及医疗器械,设计,检验,无菌灌装设备运行,ISO质量管理系统等方面有20多年的工作经验。在加入生物时代之前， 杜威博士是格立克森生物系统公司（Glycosan BioSystems）的创始人之一, 总裁及首席执行官。杜威博士曾在约翰霍普金斯大学医学院任副教务长与副院长负责授权与技术发展。他建立了切萨皮克生物实验室 (Chesapeake Biological Lab，简称CBL),並任职主席与CEO, 严格按照FDA标准开发制造大宗药品,注射类药物及医疗器械。

CellCure NeuroSciences Ltd. is developing cell therapy products for the treatment of degenerative diseases of the retina and nervous system. One of the most promising applications in the cell therapy field is the treatment of the dry-form of age related macular degeneration (Dry-AMD) by the transplantation of retinal pigmented epithelium cells into the retina. There is no cure and no FDA approved therapies for Dry-AMD, which is leading cause of visual impairment in persons above the age of 50. The development of this promising therapeutic approach has been hindered by the lack of an adequate supply of RPE cells for use in transplantation. CellCure has found a solution for this problem. By using a novel directed differentiation method the company has succeeded in producing the large quantities of RPE cells with the level of purity required for a cell therapeutic product. These form the basis of the company's lead cell transplantation product, OpRegen®, which consists of RPE cells in suspension. The project is advancing through the pre-clinical stage. The company is also developing, OpRegen® Plus, that consists of RPE cells supported on a membrane, as well as other therapeutic cells for neurodegenerative diseases. CellCure was formed in 2005 and is located in the Jerusalem BioPark facility on the campus of Hadassah University Hospital, Ein Kerem, Jerusalem.

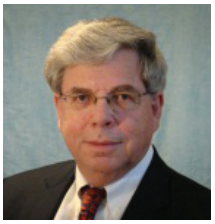
## Speaker

**Charles S. Irving, Ph.D.** has served as the CEO of CellCure NeuroSciences Ltd. since its founding in 2005. He holds a Ph.D. from the Chemistry faculty of the Weizmann Institute of Science, Rehovot, Israel and a B.A. from Wesleyan University. Before switching from academia to biomed product development, Dr. Irving was an Associate Professor in the Department of Pediatrics, Baylor College of Medicine, Houston TX. Dr. Irving brings to Cell Cure Neurosciences valuable managerial skills having been the COO of an Israeli subsidiary of a US medical device company for nine years and Vice President of Clinical and Regulatory Affairs and VP of Business Development of the Israeli biomedical device company Karmel Medical Acoustic Technologies Ltd. In the area of biotech company management, Dr. Irving led TheraVir Ltd. from the stage of in-licensing academic technology through cGMP production to Phase I/II clinical trials and the out-licensing of an anti-cancer live oncolytic virus vaccine. He also led another Verto Ltd. through pre-clinicals and the start of its Phase I clinical trial.

## 神经细胞治疗公司（CellCure NeuroSciences Ltd.）

神经细胞治疗公司（CellCure NeuroSciences Ltd.）正在开发针对视网膜和神经系统退化性疾病的细胞治疗产品。在细胞治疗领域中最有前景的应用是通过在视网膜里植入视网膜色素上皮细胞治疗老年性干性黄斑变性 (Dry-AMD) 的方法。Dry-AMD是导致50岁以上人群产生视觉障碍的主要原因，目前还没有可以治愈和被FDA认可的的治疗方法。但是这种极具潜力的疗法由于移植时使用的RPE细胞供应不足，发展受到了阻碍。而神经细胞治疗公司已经找到了解决这个问题的方法。公司通过使用一种新的定向分化法成功地生产出了大量符合细胞治疗纯度要求的RPE细胞。这为公司开发其主要细胞移植产品---含有悬浮RPE细胞的OpRegen®奠定了基础。这个项目正处于临床前阶段。此外，公司还在开发OpRegen® Plus产品---此产品包含附着在膜上的RPE细胞；以及开发其它用于神经退化性疾病治疗的细胞产品。神经细胞治疗公司成立于2005年，位于耶路撒冷哈达萨大学医院内的生物园区。

### 主讲人



查理斯 · 艾文（Charles S. Irving, Ph.D.）从2005年神经细胞治疗公司（CellCure NeuroSciences Ltd.）成立至今，一直担任公司首席执行官。他毕业于以色列雷霍沃特的魏兹曼科学研究所化学系并取得博士学位；他从学术界转到生物技术产品开发领域之前是美国德克萨斯州贝勒医学院儿科系的副教授。艾文博士曾在美国一家医疗器械公司的子公司里担任首席运营官，任期9年；临床与法规事务部副总裁；以色列生物设备企业---卡梅尔医疗声学技术有限公司（Karmel Medical Acoustic Technologies Ltd.）商业发展部副总裁，因此，Irving博士在加入细胞治疗公司（CellCure）后，为其带来了宝贵的管理经验。此外，在生物技术公司管理领域，他曾带领希拉威尔公司(TheraVirLtd.)完成了从学术技术的授权阶段 到 cGMP 生产 以及 I期/II 期临床试验和抗肿瘤溶瘤活病毒疫苗授权的整个过程。他还领导另一家企业---沃杜公司（Verto）通过了临床前并启动临床1期试验。

The mission of OncoCyte Corporation is to develop novel products for the diagnosis and treatment of cancer based on embryonic stem cell-derived technology in order to improve both the quality and length of life of cancer patients.

OncoCyte's molecular diagnostics division is developing products that should provide for earlier detection and more effective treatment of numerous cancers. Our research has demonstrated that many of the same genes associated with the normal growth of embryonic stem cells are abnormally reactivated by cancer cells. Under this premise, we have established a proprietary dataset using RNA microarray technology; this dataset contains expression levels of over 47,000 genes in over 450 unique samples, representing both normal and cancerous tissues and cell lines, including multiple human embryonic stem cell lines. This broad, bioinformatics-based approach has allowed us to identify numerous genes abnormally activated in cancer or tumor cells; 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. This gene expression data presents numerous diagnostic product opportunities, such as tests designed to:

- Screen patient samples for the presence of cancer,
- Determine which treatment courses have highest chances for producing a favorable response in individual patients, or
- Monitor for recurrence of a patients cancer.

Our current development strategy for cancer diagnostic products is to evaluate and validate specific diagnostic products based on unmet medical need, market size and ease of use.

In addition to the diagnostic product line, OncoCyte is also developing cellular therapeutics for cancer therapy that will take advantage of the unique biology of vascular endothelial precursor cells. Vascular biology encompasses many potential therapeutic applications, including those for cancer, peripheral vascular disease, and cardiac disease. The goal of our therapeutic research efforts is to derive vascular endothelial cells that can be engineered to deliver a toxic payload to the developing blood vessels of a tumor to specifically remove malignant tumors while not affecting nearby normal tissues in the body. In 2010, OncoCyte purchased the assets of Cell Targeting, Inc. including technology that uses peptides selected for their ability to adhere to diseased tissues. OncoCyte intends to develop a new class of cellular therapeutics that would specifically target the development of tumor vasculature in advanced cancers as an entry point for the delivery of regulated tumoricidal activities.

# 安克赛特公司（OncoCyte Corporation）

安克赛特公司（OncoCyte Corporation）的使命是基于胚胎干细胞衍生技术开发诊断与治疗癌症的新药，以提高癌症患者的生命质量并延长他们的生命。

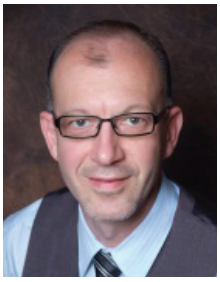
安克赛特公司的分子诊断部门致力于开发能提供早期检测以及更多可有效治疗多种癌症的产品。公司的研究结果证明很多与胚胎干细胞正常生长有关的相同基因会被癌细胞异常活化。因此，公司用RNA微阵列技术建立了一个享有专利的数据集；这个数据集包含来自450多个独特样本中47000多个基因的表达水平，既体现了正常组织与其细胞系又体现了癌组织与其细胞系，包括多种人胚胎干细胞株。 生物信息方法使我们可以鉴定许多在癌细胞或肿瘤细胞中被异常活化的基因，其中许多基因是之前没有被认定与癌症相关的。而且，这些基因大部分可在众多的癌症类型中保留（如: 乳腺癌，结肠癌，卵巢癌等），这表明这些基因可以在癌症成长及恶化阶段控制基础过程。这种基因表达数据展现了许多诊断产品的开发机会，如以下测试：

- 从病人样本中筛选癌症患者；
- 针对个别患者来决定最有效果的治疗；
- 或者监测病人癌症的复发；

公司目前对癌症诊断产品的发展战略是根据未满足的市场需求，市场容量及使用难易程度来评选并验证特有的诊断产品。

除了诊断产品生产线之外，公司还在利用血管内皮前体细胞特有的生物学原理，为癌症治疗开发细胞疗法。血管生物学包含很多潜在的治疗应用，包括用于治疗癌症，周围性血管疾病及心脏病的应用。公司在治疗领域的研究目的是衍生出血管内皮细胞，这种细胞可用于传递一种毒性负荷至在成长中的肿瘤血管，针对性的去攻击恶性肿瘤，而不影响周围正常身体组织。2010年，安克赛特公司（OncoCyte）收购了赛尔拓公司（Cell Targeting Inc.）的资产，包括用选出的多肽类粘附在患病组织上的技术。 公司打算开发一类新的细胞疗法，可以专门的以晚期癌症肿瘤脉管系统的发展为靶标，以此作为传递有规则的杀肿瘤活动的切入点。

## Speakers



**Joseph Wagner, Ph.D.** became Chief Executive Officer of OncoCyte Corporation upon the acquisition of Cell Targeting, Inc. (CTI). At CTI, Dr. Wagner was the President and Chief Technology Officer responsible for all corporate functions including research, product development, finance, business development and management of intellectual property. Prior to CTI, Dr. Wagner held positions of increasing responsibility at Neuronyx, Inc. and was most recently the Vice President of Cellular Therapy. In this role, he was instrumental in filing the first Investigational New Drug application for the company. Dr. Wagner was also an Associate Professor at the Karolinska Institute in Stockholm, Sweden, where his research focused on molecular and cellular approaches to brain development and regeneration. Dr. Wagner received his Ph.D. in Pharmacology from Duke University.

**Karen B. Chapman, Ph.D.** is the Director of Bioinformatics at OncoCyte Corporation, a subsidiary of BioTime, Inc. She received her Ph.D. from Johns Hopkins University School of Medicine in 1991, followed by a fellowship in molecular biology at Harvard Medical School/Massachusetts General Hospital in the laboratory of Nobel Laureate Dr. Jack W. Szostak. Dr. Chapman is a summa cum laude graduate of Cornell University and was the recipient of the Helen Hay Whitney fellowship, the Paul Schreurs Memorial Award for outstanding research at Cornell University and the Paul Ehrlich Research Award at Johns Hopkins University School of Medicine. She has focused her business career on biotechnology and medical applications of genetic technologies. While a scientist at Geron Corporation of Menlo Park, California, from 1994 to 1997, she participated in the cloning of human telomerase and is an inventor of numerous patents related to the use of the telomerase gene in medicine. She was a co-founder of Origen Therapeutics, a company focused on the manufacture of therapeutic proteins in transgenic animal systems. She was also Senior Scientist and Associate Director of Business Development at Advanced Cell Technology, Inc. where she managed efforts in the epigenetic and telomere status of embryonic stem cells and business contract negotiations.

# 安克赛特公司（OncoCyte Corporation）

## 主讲人

约瑟夫 · 瓦格纳博士(Joseph Wagner,Ph.D.)在赛尔拓（Cell Targeting）公司（简称CTI）被生物时代公司收购之后即被任命为安克赛特公司（OncoCyte Corporation）的首席执行官。他原是CTI公司的总裁及技术总监，负责公司运营，包括产品研发，财政，商业开发及知识产权管理等。在加入CTI之前，瓦格纳博士曾在纽洛尼克斯公司（Neuronyx）身居要职，而后成为赛尔赛勒公司（Cell Therapy）副总裁，并对公司的首次临床试验新药申请起到很大帮助。此外，瓦格纳博士还是位于瑞典首都斯德哥尔摩的卡罗林斯卡医学院的副教授，致力于使大脑发育和再生的分子及细胞研究。瓦格纳博士在杜克大学获得药理学博士学位。

凯伦 · 查普曼博士(Karen B. Chapman, Ph.D.)是安克赛特公司（OncoCyte Corporation， BioTime的子公司）生物信息部门总监，1991年她毕业于约翰斯霍普金斯大学医学院并取得博士学位。随后，她便进入哈佛医学院分子生物及麻省总医院的诺贝尔奖得主Jack W. Szostak博士的实验室工作。查普曼博士以最优异的成绩毕业于康奈尔大学，并曾获得海伦.惠特尼奖学金(Helen Hay Whitney fellowship)，康奈尔大学保罗.施鲁斯纪念奖( Paul Schreurs Memorial Award)及约翰斯霍普金斯大学医学院保罗.埃尔利希研究奖(Paul Ehrlich Research Award )。 她致力于研究生物技术与基因技术的医疗应用。 1994年至1997年，加入美国杰龙公司（Geron Corporation）并参与人端粒酶的克隆研究，发明了许与多端粒酶基因在医疗中的应用有关的专利。她是奥立金公司（Origen Therapeutics）的创始人之一，此公司专注于生产转基因动物系统的治疗蛋白。查普曼博士曾是细胞科技公司（Cell Technology Inc.）的高级科学家及其商业发展部门副总监, 负责胚胎干细胞的遗传及端粒状态研究, 以及商业合同的协商拟定。

# OrthoCyte Corporation

OrthoCyte Corporation is a wholly-owned subsidiary of BioTime, Inc. developing cellular therapeutics for orthopedic diseases and injuries. Our lead products are human embryonic progenitor cell (hEPC) lines for cartilage repair. We have identified several ACTCellerate™ progenitor cell lines that display chondrogenic (cartilage-producing) potential. These lines are currently in the pre-clinical testing phase to optimize effective cartilage repair. Our goal is to demonstrate the utility of the cells using *in vivo* models of cartilage defect and disease, and to initiate clinical trials for select applications. Cartilage impairment represents a large and growing population. Ultimately, we believe that our hEPC lines are ideally suited for cartilage applications, due to their inherent biological stability and capacity for expansion in culture. OrthoCyte's initial product focus will be the the development our pipeline therapeutic products, namely OTX-CP03 and OTX-CP07, for use in the treatment of osteoarthritis.

## Speaker

**Arnold I. Caplan, Ph.D.** is the Chief Scientific Officer of OrthoCyte Corporation, a subsidiary of BioTime, Inc. Dr. Caplan also currently serves as Professor of Biology & General Medical Sciences (Oncology), Director of Cellular and Molecular Basis for the Aging Training Program, as well as Director of the Skeletal Research Center at Case Western Reserve University. Dr. Caplan has lectured and published extensively within the fields of cellular and molecular, developmental and bone biology and is recognized as one of the foremost authorities on tissue regeneration. Dr. Caplan has founded several biotechnology companies, including Osiris Therapeutics, Inc. and Cell Targeting Inc. He is the recipient of several honors and awards from the orthopedic research community. Dr. Caplan holds his Ph.D. from Johns Hopkins University Medical School and a B.S in chemistry from the Illinois Institute of Technology.

## 奥舍赛特公司（OrthoCyte Corporation）

奥舍赛特公司（OrthoCyte Corporation）是生物时代的全资子公司，开发用于治疗骨科疾病和损伤的细胞疗法。公司的主打产品是人胚胎祖细胞株（hEPC），用于软骨修复。公司已经鉴定出数个显示具有形成软骨潜能的ACTCellerate™ 祖细胞株，目前这些细胞系在临床前测试阶段，在优化其对软骨的修复效果。公司的目标是证实细胞在软骨缺损和疾病的体内模型中的应用，以及对所选择的应用启动临床实验。我们相信，基于人胚胎祖细胞系固有的生物稳定性和它们在培养时的扩增能力，它们在软骨应用中是理想的选择。奥舍赛特公司最初的产品战略是对治疗产品OTX-CP03 和 OTX-CP07的开发，这些产品用于治疗骨关节炎。

## 主讲人

阿诺德 · 卡普兰博士（Arnold I. Caplan, Ph.D.）担任生物时代子公司奥舍赛特公司(OrthoCyte Corp.)的首席科学官。卡普兰博士是俄亥俄州克利夫兰市凯斯西储大学生物和医学科学研究所（肿瘤学）的教授，也是该大学老年培训计划中细胞与分子基础部主任和骨骼研究中心主任。卡普兰博士在细胞与分子学/发育和骨骼生物学领域发表大量的讲座及研究论文，并被认为是组织再生领域其中最权威的专家，获得了骨科研究社团授予的多项荣誉和嘉奖。卡普兰博士是欧西里斯治疗公司（Osiris Therapeutics, Inc. ）和赛尔拓公司（Cell Targeting, Inc.）的创始人。卡普兰博士在伊利诺理工大学获得化学学士学位，在约翰霍普金斯大学医学院获得博士学位。

ReCyte Therapeutics, Inc. is developing both cellular and acellular (cell-free) therapies for repair of vascular disorders related to aging and injury, especially for cardiovascular and cerebrovascular (i.e., stroke)-related diseases. These are among the leading causes of death and disability, and consume a major and ever-increasing proportion of health care costs. ReCyte's therapeutic products are unique in vitro-produced derivatives of human pluripotent stem cells that can rejuvenate or regenerate damaged cells and tissues in patients. To accomplish these objectives, the company has established three major platform technologies: (1) somatic cell reprogramming to pluripotency (iPS technology) that can reverse the developmental aging of cells and provide sources for deriving donor-specific cellular therapeutics that are fully histocompatible with patients; (2) derivation of endothelial progenitor cells (cells forming the lining of blood vessels) that can be delivered to patients with vascular disorders to quickly restore the integrity of their vasculature, and (3) "embryonic trophic factors" or ETFs (proteins that support cell growth, survival, migration and differentiation), purified from the "secretomes" of proprietary stem cell-derived embryonic progenitor cell lines, that can be delivered to an injury site to create an embryonic environment that protects tissues from damage and boosts the regenerative capacity of the patient's own tissue stem cells. ReCyte has already produced highly purified endothelial progenitor cells consistently at industrial-scale under chemically-defined and GMP-compatible conditions from multiple pluripotent stem cell lines. ReCyte's acellular ETFs represent an entirely new class of therapeutics intended to be universal for patient recipients, off-the-shelf, stable under moderate shipping and storage conditions, and considered to have less complicated development and regulatory paths for clinical uses. The company has obtained early preclinical evidence for the feasibility of this novel ETF approach in an animal model of stroke. ReCyte was founded in early 2011 as a subsidiary of BioTime, Inc. with investments by private shareholders and by BioTime. The company shares laboratory facilities and many operations functions with its parent company in Alameda, CA, and has full access to all relevant technology, expertise, and intellectual property held by BioTime and its other subsidiaries. Recyte is also the beneficiary of key external technology and patent licensing agreements. These include licenses for development and commercialization of technology related to vascular endothelial cells invented by Dr. Shahin Rafii and colleagues at Weill-Cornell Medical College, New York, and for uses of the SP100 gene in cellular reprogramming invented by Dr. Louise Showe and colleagues at The Wistar Institute, Philadelphia. ReCyte-BioTime has also established sponsored research agreements with the inventors and leading scientists from these institutions who continue to advance the technologies.

## 瑞赛特治疗公司（ReCyte Therapeutics）

瑞赛特治疗公司（ReCyte Therapeutics）正在开发针对与老年性及损伤相关的血管疾病的细胞与非细胞疗法 ，尤其注重对心血管和脑血管疾病（如，中风）的治疗。这些疾病是导致死亡和残疾的主要原因，并消耗掉了大部分且不断增长的医疗保健成本。瑞赛特（ReCyte）的治疗产品是独特的在在试管内生产出的人多能干细胞衍生物，这些细胞可恢复或者再生患者受损的细胞组和织。为了实现这些目标，公司已经建立了3个主要平台技术：（1）体细胞重组使其具有诱导多能性的技术(iPS 技术)，这项技术可逆转细胞的老化发展并提供供者特异性细胞疗法所需的细胞来源，这些细胞源与病人是完全组织相容的。（2）内皮祖细胞（可以形成血管内壁）的衍生技术，这些细胞被注入到血管疾病患者体内，可使他们的脉管系统快速恢复如初（3）从公司专有的人胚胎祖细胞系的“分泌系统”中分离胚胎“营养因子”/ETFs（用以支持细胞成长，存活，移动和分化的蛋白质）的技术，这些营养因子可以被传递至损伤处，在那里它们快速的产生一种类似胚胎环境用以保护组织不受伤害，并促进患者自身组织干细胞的再生能力。公司已经可以在在经化学法界定并符合GMP要求的条件下从多种人胚胎干细胞系中连续的工业规模化生产内皮祖细胞。瑞赛特（ReCyte）的非细胞胚胎营养因子代表着干细胞疗法的一个全新级别，可广泛用于需接受治疗的患者在适度的船运和贮藏条件下具有稳定性，并具有相对简单的开发及临床应用申请途径。瑞赛特公司（ReCyte）已经在中风的动物模型中获得了这种新营养因子方法可行性的早期临床证明。瑞赛特治疗公司（ReCyte）成立于2011年初，是生物时代的一个子公司，由生物时代和私人股东投资成立。 他与其母公司在加州的阿拉梅达共同享有试验设施，行政及运营功能；瑞赛特（ReCyte）拥有所有相关技术，专家以及由生物时代及其子公司掌管的知识产权，此外，瑞赛特（ReCyte）还从外部关键技术及专利许可协议中大获益处，包括与血管内皮细胞相关的开发及商业化许可，这项技术是由Shahin Rafii博士及其在纽约威尔康奈尔医学院的同事共同发明的；以及在细胞重新编程中使用 SP100 gene的许可，由Louise Showe博士及其费城的维斯塔研究所的同事共同发明。瑞赛特—生物时代还同发明者们以及机构中的主要科学家建立了研究支助协议，帮助他们继续推进技术的发展。

## Speakers

**Steven Kessler, Ph.D.** is the Vice President of Research and Development for ReCyte Therapeutics. His experience in stem cell translational research and development of stem cell-based therapeutics spans more than 2 decades. Most recently at BioTime, Inc., he developed the process for deriving endothelial progenitor cells under GMP-compatible conditions that forms one of the main technology platforms for ReCyte. Earlier at Advanced Cell Technology, Inc., Dr. Kessler served as Director, Technical & Process Development. He also previously served as Director, Stem Cell Selection Product & Process Development at SyStemix, Inc., Head of the Novartis Cellular Immunotherapy Research Program, Senior Investigator and founding Head of the Stem Cell Biology Branch at the U.S. Naval Medical Research Institute (Bethesda, MD), and also founder and head of a cell processing facility that supplied hematopoietic stem cells for intramural NIH, U.S. Army and Navy research in the Bethesda region for many years. Dr. Kessler received his Ph.D. in Immunology from the University of California, Los Angeles, School of Medicine.

**Shahin Rafii, M.D.** is the Arthur B. Belfer Professor of Genetic Medicine and Director of the Ansary Stem Cell Institute at Weill Medical College of Cornell University. He is also an investigator of Howard Hughes Medical Institute. Dr. Rafii pioneers the concept that both tumors and regenerating organs rely on stem cells from the bone marrow to help build new blood vessels. The innovative work from his laboratory has contributed significantly to our understanding of the molecular pathways and angiocrine factors that orchestrate recruitment, differentiation, and patterning of blood vessels as well as in organ regeneration. Dr. Rafii has published more than 200 seminal papers and book chapters in the area of stem cell and tissue regeneration. He received a B.S. degree from Cornell University and an M.D. degree from Albert Einstein College of Medicine. He completed his clinical residency training in internal medicine and a clinical fellowship in hematology-oncology at the New York-Presbyterian Hospital.

## 瑞赛特治疗公司（ReCyte Therapeutics）

# 主讲人

史蒂芬 · 凯斯勒博士（Steven Kessler, Ph.D. ）担任瑞赛特（ReCyte）公司研发部副总裁。他在干细胞转化研究和干细胞疗法开发领域有20余年的工作经验。最近，他在生物时代公司发明了一种在附合GMP条件下分化出内皮祖细胞的工艺，并成为瑞赛特公司（ReCyte）的主要技术平台之一。此前，他在尖端细胞科技公司的技术工艺开发部担任主任，在此期间，他参与发明了用于衍生胚胎祖细胞系的 ACTCellerate™ 技术平台，此技术后来被生物时代收购。此外他担任过的职位还有：西斯米公司（SyStemix）干细胞产品筛选及工艺开发部主任, 诺华细胞免疫疗法研究项目的创始领导人。在此之前，他是美国海军医学研究所高级研究员，及其干细胞生物分部的创始领导人。期间，他发明了一种首创性的技术---用于净化人造血干细胞，并研制出了一种干细胞加工设备，此设备多年来一直用于为NIH内部，陆军和海军对贝萨达（Bethesda）区域的研究工作。凯斯勒博士在加州大学洛杉矶分校医学院获得免疫学博士学位。

沙罕 · 瑞菲博士（Shahin Rafii, M.D.）是美国康乃尔大学Weill医学院亚瑟贝尔弗遗传医学教授和安萨里干细胞研究所所长，他也是霍华德休斯医学研究所的研究员。瑞菲博士创新肿瘤和再生器官的概念，即依靠从骨髓中的干细胞，以帮助建立新的血管。从他的实验室研发工作作出了重大贡献，增加我们对“血管因素”以及器官再生的理解。瑞菲博士在干细胞和组织再生领域已发表超过200多编开创性的研究论文和课本章节。瑞菲博士在美国康奈尔大学取得学士学位，并在爱因斯坦医学院获得医学博士学位，并在纽约长老会医院完成了内科，血液科与肿瘤科的临床培训。

# LifeMap Sciences

LifeMap Sciences (LifeMap) is a development stage biotechnology company operating in the field of stem cells and regenerative medicine. Our mission is to become the central knowledge-base, the leading provider for stem cell research and the leader in the discovery of cell-based regenerative medicine therapeutic products. LifeMap's core technology and business is based on a state-of-the-art roadmap for stem cell research, including a set of integrated databases, and research reagents marketing and sales, as well as therapeutic discovery collaborations with BioTime based on more than 200 proprietary human embryonic stem and progenitor cell types. LifeMap has a well balanced business approach relying on current and growing income from database products, marketing research products, and a large upside from therapeutic product discovery. The LifeMap database products include the LifeMap database, *GeneCards*®, The Human Gene Compendium, MalaCards™, The Human Gene Compendium, and PanDaTox™. LifeMap will utilize its databases as part of its marketing strategy to reach life sciences researchers in biopharmaceutical companies, academic institutions and research hospitals worldwide. LifeMap will also utilize its discovery platform to aid in the development of BioTime's proprietary ACTCellerate™ platform into cell-based therapies by rationally selecting human progenitor cell lines to treat various diseases.

## Speaker

**David Warshawsky, Ph.D.,** is a co-founder, President and Chief Executive Officer of LifeMap Sciences. He previously founded Xennex, Inc. and served as its CEO and Chairman. Dr. Warshawsky was also a founder and CEO of Avraham Pharmaceuticals, a founder and Director of Varinel, Inc., Vice President of Business Development at Paramount Biosciences, and a Director of Business Development Worldwide, Novel Genomics Division, at Compugen, and a Licensing Associate at University of Massachusetts, Office of Commercial Ventures and Intellectual Property. Dr. Warshawsky earned his Ph.D. in Molecular Biology from the University of Illinois at Chicago and his B.Sc. in Biology from Tel Aviv University. He was a research fellow at Harvard and Harvard Medical School.

## 生命图公司（LifeMap Sciences）

生命图公司（LifeMap Sciences）是专注于干细胞和再生医学领域、正处于发展期的生物技术公司。它的科学使命是成为世界中心知识库，即干细胞研究的主要供应商和再生医学细胞治疗产品的领跑者。生命图公司的核心技术与业务以最先进的干细胞发究路径图为基础，包括一套完整的数据库、研究试剂市场营销方案，以及与生物时代公司（BioTime） 基于200多种专有人胚胎干细胞系 和祖细胞的治疗剂合作开发项目。生命图公司依赖其当前呈增长趋势的收入，有着均衡的商业管理途径。公司收入主要来自于数据库产品、市场研究产品、以及发展迅速的治疗产品发现业务。生命图公司的数据库产品包括：生命图数据库，一种最先进的用于干细胞研发的路径图，综合覆盖于胚胎干细胞生物学领域；GeneCards®，人体基因目录，是先进并广受好评的人体基因数据库；MalaCards™，人体基因目录，一个新的人类疾病数据库； PanDaTox™，可以协助发现新抗生素和有益功能基因。生命图公司将把数据库作为市场营销的一部分，以接触数以万计在生物技术、制药公司及学术机构和研究医院工作的生命科学研究者。在与生物时代（BioTime)合作的治疗产品发现项目中，生命图公司将利用它的发现平台帮助生物时代开发其专利产品 ACTCellerate™ 人祖细胞株在细胞疗法中的应用。生命图发现平台将被用于筛选祖细胞株，开发治疗不同疾病的细胞再生疗法。

## 主讲人

大卫 · 沃萨斯基博士（David Warshawsky, Ph.D.）是生命图公司的创始人之一，担任公司总裁及首席执行官。沃萨斯基博士有20余年的工作经验，领域涉及尖端生物医学研究，以及在生物技术/制药/生物信息行业的商业运营，执行及管理。他所创建或任职于高管的公司皆致力于生命数据库开发，制药或是生命科学领域的投资。沃萨斯基博士建立了森奈克公司（Xennex, Inc.），并担任其首席执行官及主席；还创立了亚维拉罕制药公司(Avraham Pharmaceuticals）；瓦力诺公司（Varinel, Inc.)；曾是派拉蒙生物科学公司（Paramount Biosciences） 商业开发部副总裁；全球商业开发公司（Business Development Worldwide，以色列的一家公司并在纳斯达克上市）新基因组学部门总监；麻省大学商业企业及知识产权办公室的授权负责人。在步入商业界之前，沃萨斯基博士致力于生命科学的学术研究。沃萨斯基博士于芝加哥伊利诺伊大学获得分子生物博士学位；于以色列特拉维夫大学毕业并获得理学士学位。並于哈佛大学及哈佛医学院担任研究员。

# BioTime Asia Limited

BioTime Asia Limited is a subsidiary of BioTime,Inc. for the purpose of clinically developing and marketing therapeutic stem cell products in the People's Republic of China, and marketing stem cell research products in China and other countries in Asia. BioTime Asia initially seek to develop the therapeutic products for the treatment of ophthalmologic, skin, musculoskeletal system and hematologic diseases, including the targeting of genetically modified stem cells to tumors as a novel means of treating currently incurable forms of cancer. BioTime has engaged the services of an authoritative network of key opinion leaders in the stem cell arena, including Dr. Daopei Lu, to facilitate BioTime Asia in arranging and managing clinical trials of therapeutic stem cell products. Dr. Lu is a world-renowned hematologist and expert in the field of hematopoietic stem cell transplants who pioneered the first successful syngeneic bone marrow stem cell transplant in the People's Republic of China to treat aplastic anemia and the first allogeneic peripheral blood stem cell transplant to treat acute leukemia. BioTime will license the new venture rights to use certain stem cell technology, and will market the new venture stem cell products for therapeutic use and for resale as research products.

## Speaker

**David K. Jin, M.D., Ph.D.** is the Chief Medical Office for BioTime Inc. as well as its two subsidiaries, namely BioTime Asia Limited and OncoCyte Corporation. He completed his clinical training in internal medicine, hematology, and oncology at New York-Presbyterian Hospital, and subsequently became clinical Cornell. During his academic tenure, Dr. Jin has directed over 10 clinical trials at various R&D stages. He has served as the director for the Lehman Brothers Lung Cancer Research Center and senior clinician-scientist at the Ansary Stem Cell Institute at Cornell, as well as medical reviewer for oncology product development at the U.S. FDA. Recently, Dr. Jin has been appointed by China's Ministry of Health as external adviser and member of the evaluation committee to MOH's Third Category Medical Treatment Technology (for regulation and standardization of stem cell therapy and cell-based immunotherapy), as well as adviser to the Chinese-U.K. "Dynasty Project" to establish an international collaborative zone for clinical medicine in Wuhan BioLake. Dr. Jin recieved his B.S. degree (summa cum laude) from Massachusetts College of Pharmacy and a combined M.D.-Ph.D degree from the State University of New York Downstate College of Medicine.

## 生物时代亚洲有限公司 (BioTime Asia Limited )

生物时代亚洲有限公司是生物时代为在中国发展临床和销售治疗用干细胞产品，以及在中国和亚洲其它国家销售干细胞研究产品 的子公司。生物时代亚洲有限公司最初定位于开发眼科/皮肤/肌肉-骨骼系统/及血液疾病的治疗产品，其中包含将基因修正的干细胞注入肿瘤的治疗技术，这是治疗当前仍不可治愈的癌症的新疗法。生物时代已经开展了一项由干细胞领域中主要权威学者组成的服务网络，其中有陆道培院士，负责生物时代亚洲对治疗用细胞产品临床试验的安排与管理。陆院士是世界知名的血液学家及造血干细胞移植领域的专家，他在中国首次成功地进行了同源造血干细胞移植，用以治疗再生障碍性贫血；并首次完成了异体外周血干细胞移植，用以治疗急性白血病。 生物时代将授权这个新公司某种干细胞技术的使用权，并销售给此公司干细胞产品用于治疗或作为研究试剂的再次销售。

## 主讲人

詹建强医学博士（David K. Jin，M.D., Ph.D.）从2010年起开始担任生物时代及其2个子公司生物时代亚洲有限公司和安克赛特公司的首席医务官。詹博士是美国的执业医师，詹博士在1992年作为班毕业生代表以最优异的成绩毕业于麻萨诸塞州大学药学院；此后在纽约州立大学医学院获得了医学与Ph.D.双博士学位。他在美国纽约长老会医院（哥伦比亚与康奈尔大学的教学医院）完成了其内科、血液科、以及肿瘤科的临床培训；随后成为康奈尔大学的临场教授与研究员。詹博士在其学术研究期内领导了10余个由著名制药公司支助的不同研发阶段的临床试验。在雷曼兄弟肺癌研究中心担任主任，以及在安萨里干细胞研究院担任高级临床医师科学家。詹博士发表超过30篇经医务同行审查过的研究及临床论文。詹博士曾在美国FDA担任肿瘤科新药开发方面的审查官，最近被中国卫生部任命为国际顾问及卫生部第三类医疗技术（干细胞疗法及细胞免疫疗法的法规与标准制定）评审委员会顾问，以及中英“王朝计划”（在武汉生物产业基地建立临床医学基地国际合作区）的首席顾问。

# ES Cell International Pte. Ltd.

BioTime Inc. acquired the Singapore-based company ES Cell International Pte Ltd (ESI) in 2010. Established in 2000, ESI has been at the forefront of advances in human embryonic stem cell technology, being one of the earliest distributors of hES cell lines to the research community. More recently, ESI has produced an additional 6 new clinical-grade human embryonic stem cell lines that were derived following principles of Good Manufacturing Practice (GMP) and currently offers them for potential use in therapeutic product development. ESI's assets also include 20 patent families, including 50 issued patents in the field of stem cell biology, and a significant equity position in the Israel-based stem cell company CellCure Neurosciences Ltd. BioTime plans to combine the newly-acquired assets with its ACTCellerate™ and ReCyte™ technologies to accelerate the development of numerous human therapeutic products. The founding scientists of ESI have been pioneers in the field of regenerative medicine. The combination of ESI's assets with BioTime give the combined company a broad manufacturing platform for a wide array of potential human therapeutic products.

## ES细胞国际 (ES Cell International Pte. Ltd.)

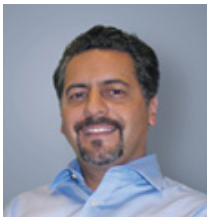
生物时代公司在2010年收购了新加坡公司ES细胞国际（ESI）。ESI成立于2000年，一直处于人胚胎干细胞技术的前沿，是最早的将人胚胎干细胞系销售给研究社群的分销商。最近，ESI已经在GMP条件下生产出了另外6种新临床级人胚胎干细胞系，目前这些新细胞系用于满足开发治疗产品的需求。ESI的资产还包括20个专利族，50个干细胞生物学领域的已授权专利，以及位于以色列的神经细胞治疗公司（CellCure）大部分股权。 生物时代计划将它的 ACTCellerate™ 和 ReCyte™ 技术与其新收购的资产合并，以加速多种人类治疗产品的开发。ESI的创始科学家是再生医学领域的先驱。生物时代与ESI资产的合并使其拥有了多种潜在人类治疗产品的广阔生产平台。

# Overview of Investment Opportunities

BioTime, Inc. has organized subsidiaries to undertake its cell replacement therapeutic programs. BioTime partly or wholly funds these subsidiaries, recruits their management teams, assists them in acquiring technology, and provides general guidance for building the subsidiary companies. BioTime may license its patents and technology to the subsidiaries that it does not wholly own; under agreements that will entitle it to receive royalty payments from the commercialization of products or technology developed. Having subsidiaries that focus on particular disease applications or research products will facilitate the optimization of scientific and commercial collaborations, thereby improving the probability that a subsidiary company will eventually become an industry leader.

The organization of BioTime's regenerative medicine business into subsidiaries has also facilitated its ability to obtain financing for regenerative medicine programs at the subsidiary level. The joint ownership of subsidiaries with other investors will allow BioTime to fund the development costs of therapeutics in a manner that spreads the costs and risk and allows investors to choose to invest in a particular therapeutic area. In some cases, the co-investors in BioTime subsidiaries may include other participants in the pharmaceutical or biotechnology industry and their affiliates. An example of this is its investment in Cell Cure Neurosciences, which was made in concert with investments from Teva Pharmaceutical Industries, Ltd. and HBL-Hadasit Bio-Holdings, Ltd.

## Speaker:



**Peter S. Garcia, MBA** was appointed our Chief Financial Officer in October 2011. Before joining BioTime, Mr. Garcia was the Chief Financial Officer of six biotech and high-tech companies since 1996, and was instrumental in raising over $500 million and leading multiple merger and acquisition transactions for these companies. He was most recently with Marina Biotech, Inc. managing finance and investor relations efforts as well as corporate communications, and IT and facilities functions. From 2004 to 2008, Mr. Garcia was CFO of Nanosys, Inc., a leading nanotechnology company, where he led efforts in raising the largest private nanotechnology company financing in 2005. From 1996 to 2004, Mr. Garcia was CFO of four Bay Area biotech companies: Nuvelo, Inc.; Novacept; IntraBiotics Pharmaceuticals; and Dendreon Corp. From 1990 to 1996, he was a financial executive with Amgen, Inc. during its early days of commercializing therapeutics. Mr. Garcia graduated with honors from Stanford University with a Bachelor of Arts degree in economics and sociology and he earned his MBA from the University of California Los Angeles with a concentration in Finance and Accounting.

## 投资机会概述

生物时代公司（BioTime)已经组织其子公司进行细胞治疗项目。生物时代为这些子公司提供部分或全部项目资金，征集管理团队，协助收购相关技术，并为设立子公司提供总体指导方案。生物时代会将其专利与技术授权给它的非全资子公司，并签订协议，收取产品产业化及技术开发的提成费。生物时代拥有的这些子公司专注于研发治疗特种疾病的应用产品及研究产品，这将促进其科学优化及商业合作，进而推升这些子公司最终发展为行业巨头的可能性。

生物时代将再生医学业务组织分配到各个子公司中，这样便可以其子公司的名义为再生医学项目获取筹措资金。生物时代与其他投资者共同拥有子公司将分散它的开发成本和风险，其他投资者可以选取其中个别治疗领域进行投资。在某些情况下，生物时代会选择制药或生物技术行业中的公司及其附属机构作为共同投资者，如：神经细胞公司（CellCure NeuroSciences），其股东中包含梯瓦制药公司（Teva Pharmaceutical Industries, Ltd. ）和哈达斯生物控股公司（HBL-Hadasit Bio-Holdings, Ltd.）。

## 主讲人

彼得 · 加西亚(Peter S. Garcia, MBA) 工商管理学硕士，他于2011年10月被任命为生物时代的首席财务官。在此之前，加西亚先生自1996年起先后担任过6家生物技术与高科技公司的首席财务官，并为这些公司融资累计5亿多美元，负责过进多次合并与收购交易项目。他最近任职过的公司是玛瑞纳生物技术公司（Marina Biotech），负责管理公司财务，投资者关系以及公司通讯，IT和设备功能。2004-2008年间，加西亚先生就职于纳米系统公司（Nanosys），任首席财务官，此公司是纳米技术的领跑企业，2005年他为纳米技术公司完成了最大的一次私募融资。1996-2004年间，Garcia先生分别在旧金山湾区的4个生物技术公司担任过首席财务官，公司分别为：纽飞（Nuvelo, Inc.）;诺瓦（ Novacept）; 引卓生物制药（IntraBiotics）Pharmaceuticals；丹卓恩公司（Dendreon）。1990-1996年间，他担任安进（Amgen）公司的财务主管，那时正值安进公司将治疗方法商业化的早期阶段。加西亚先生以优异的成绩毕业于斯坦福大学并取得经济与社会学学士学位，在加州大学洛杉机分校专研金融与会计学并取得MBA学位。

# BioTime Inc. Board of Directors

**Neal C. Bradsher, CFA.** President of Broadwood Capital, Inc. Mr. Bradsher holds a B.A. degree in economics from Yale College. Earlier in his career, Mr. Bradsher was a Managing Director at Campbell Advisors, as well as a senior equity analyst at Alex Brown & Sons and Hambrecht & Quist. Currently, he also serves as a director of Questcor Pharmaceuticals.

**Arnold I. Burns, J.D.** Former U.S. Deputy Attorney General and Chief Operating Officer of the Department of Justice. Mr. Burns holds a J.D. degree from Cornell Law School and was a practicing attorney for nearly 40 years. He was a partner at Proskauer Rose, LLP and served as Chairman of QuanStar Group, LLC. Mr. Burns was also managing director of Arnhold and S. Bleichroeder, Inc. and Natixis Bleichroeder, Inc.

**Abraham E. Cohen.** Chairman and President of Kramex, a privately owned consulting firm. Mr. Cohen previously served as Senior Vice-President of Merck & Co., and as President of the Merck Sharp & Dohme International Division. Mr. Cohen also serves as a director of Teva Pharmaceutical Industries, Ltd., Chugai Pharmaceutical Co., Ltd., MannKind Corporation, among others.

**Alfred D. Kingsley, J.D., LLM.** Chairman of BioTime, Inc. Mr. Kingsley holds a BS degree in economics from the Wharton School of the University of Pennsylvania, and a J.D. degree and LLM in taxation from New York University Law School. Mr. Kingsley served as Senior Vice-President of Icahn and Company and its affiliated entities for more than 25 years. He is also general partner of Greenway Partners, L.P., and President of Greenbelt Corp.

**Pedro Lichtinger, MBA.** President and Chief Executive Officer of Optimer Pharmaceuticals, Inc. Mr. Lichtinger previously served as President of Pfizer's Global Primary Care Unit, Area President (Europe), as well as President of Pfizer's Global Animal Health. Before joining Pfizer, Mr. Lichtinger was Senior Vice-President Europe Animal Health at Smith Kline Beecham. Mr. Lichtinger holds an MBA degree from the Wharton School of Business and an Engineering degree from the National University of Mexico.

**Judith Segall** Vice President of Administration and Corporate Secretary. Ms. Segall received a B.S. in Nutrition and Clinical Dietetics from the University of California at Berkeley. She is a co-founder of BioTime.

**Michael D. West, Ph.D.** President and Chief Executive Officer of BioTime, Inc. Dr. West is an internationally renowned pioneer and expert in stem cell research, and has extensive academic and business experience in age-related degenerative diseases, telomerase molecular biology, and human embryonic stem cell research and development. Dr. West previously served as Chief Executive Officer, President, and Chief Scientific Officer of Advanced Cell Technology, Inc. He also founded Geron Corporation where he initiated and managed programs in telomerase diagnostics, oligonucleotide-based telomerase inhibition as anti-tumor therapy, and the cloning and use of telomerase in telomerase-mediated therapy wherein telomerase is utilized to immortalize human cells. From 1995 to 1998 he organized and managed the research between Geron and its academic collaborators James Thomson and John Gearhart that led to the first isolation of human embryonic stem and human embryonic germ cells. Dr. West received a B.S. Degree from Rensselaer Polytechnic Institute, an M.S. Degree in Biology from Andrews University, and a Ph.D. from Baylor College of Medicine concentrating on the biology of cellular aging.

**Andrew C. von Eschenbach, M.D.** Former Commissioner of the U.S. Food and Drug Administration and former Director of the National Cancer Institute. Dr. von Eschenbach is currently the President of Samaritan Health Initiatives, Inc. and an Adjunct Professor at University of Texas MD Anderson Cancer Center. Dr. von Eschenbach earned a B.S. from St. Joseph's University and a medical degree from Georgetown University School of Medicine. After his residency in urologic surgery at Pennsylvania Hospital, he completed a Fellowship in Urologic Oncology at the University of Texas MD Anderson Cancer Center. Dr. von Eschenbach entered government service after an outstanding career of over three decades as a physician, surgeon, oncologist and executive. His roles have included serving as Chairman of the Department of Urologic Oncology to Executive Vice President and Chief Academic at the University of Texas MD Anderson Cancer Center. An internationally renowned cancer specialist and author of more than 300 scientific articles and studies, Dr. von Eschenbach has assumed many leadership roles, including serving as one of the founding members of the National Dialogue on Cancer, and he has received numerous professional awards and honors. He also serves on the Chugai Pharmaceutical International Advisory Council and GE Healthymagination Advisory Board; on the Scientific Advisory Board of Arrowhead Research Corporation and Johnson & Johnson Corporate Office of Science & Technology External Scientific Advisory Board; on the Board of Directors of Elan Corporation, plc, Histosonics, Inc., Viamet Pharmaceuticals, and the NCCN Foundation; is Senior Fellow at the Milken Institute; and is a Senior Advisor to PWC Healthcare Services.