



YOUR CELLS. YOUR USE. YOUR LIFE.

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## Letter from Dr. Robin Smith



July 2010

Dear Friends,

I hope with summer here you are all able to enjoy time with friends and family in the great outdoors. Meanwhile, NeoStem is busier than ever working to provide adult stem cell storage and banking as a form of bio-insurance for you and your family. We've been simultaneously expanding our network of adult stem cell collection centers in the United States and pursuing research and development activities for adult stem cells therapies.

Most significantly, we are very excited about our recent announcement that the Vatican's Pontifical Council for Culture and NeoStem have entered into a joint initiative to expand research and raise awareness of adult stem cell therapies. This commitment is a milestone for the field of regenerative medicine. The past spring has also seen NeoStem receive a financial commitment from the U.S. Army to research wound healing through adult stem cells, ring the opening bell of the New York Stock Exchange, and add a distinguished researcher, Dr. Roberto Bolli, to its world-class Scientific Advisory Board. NeoStem management team members have presented at a number of events and conferences in the biosciences field.

There has never been a better time to have your adult stem cells collected by NeoStem. With a bright future for adult stem cell and VSEL™ technology-based therapies ahead, it makes great sense to contact a NeoStem Collection Coordinator now. Take this important step while your stem cells are younger and healthier.

Thank you for your interest in NeoStem,

Robin L. Smith, M.D.  
Chairman & CEO – NeoStem, Inc.

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## News from Collection Center

### Primary Caring of Malibu

On the evening of May 12 in Malibu, California, NeoStem and Dr. David Baron of Primary Caring of Malibu hosted a private informational event for over seventy attendees called *the Future of Healing*. It was a fun event with great food, wine and stimulating discussion. Dr. Robin Smith was able to spend time talking to people individually and in small groups following a brief overview about NeoStem and our collection and banking service. While many of the attendees were patients of Dr. Baron there were many new faces who came to learn more about NeoStem, adult stem cells, and Dr. Baron's concierge medical practice. Who would not want to spend time in Primary Caring of Malibu's beautiful offices overlooking the Pacific Ocean?

### Texas Regenerative Medicine

In April 2010, NeoStem expanded into the southwestern region of the U.S. with the the physician group at Westlake Orthopaedics Spine & Sports in Austin, Texas joining our network. Westlake is recognized as one of the most experienced orthopaedic specialist practices in Austin with over 300 patients being treated per week. Dr. Scott Spann, the founder of Westlake and one of the initial founders of Westlake

Hospital, stated, "Our commitment to patients is to provide the highest quality orthopaedic, spine, and sports medicine care utilizing the most minimally invasive and conservative treatment while incorporating the latest cutting edge and innovative techniques to provide the best outcome. Adding adult stem cell collection capabilities to our practice allows us to stay ahead of the curve". This new center was launched with stem cell collections of two of its participating physicians – Dr. Spann and Dr. Frosty Moore. KXAN news, an Austin NBC affiliate, aired an informative overview of the opening.

## NeoStem Cambridge

On Tuesday, April 27th, NeoStem announced the official launch of the company's Adult Stem Cell Collection Center and Research & Development laboratory at the Company's 8,000 square foot facility at the Riverside Technology Center in Cambridge, Massachusetts. The launch was marked by an on-site ribbon-cutting event, speakers program and facility tour scheduled. The event was hosted in association with The Massachusetts Life Sciences Center and the Massachusetts Biotechnology Council (MassBio), of which NeoStem is a member.



Featured speakers at the event included:

- Timothy Murray, Massachusetts Lieutenant Governor
- Robin Smith, M.D., Chairman and CEO of NeoStem
- Susan Windham-Bannister, President and CEO Massachusetts Life Sciences Center
- Robert Coughlin, MassBio President and CEO
- Wayne Marasco, M.D., Ph.D., Chairman of NeoStem's Scientific Advisory Board

The program's distinguished speakers discussed not only the exciting adult stem cell research NeoStem will be conducting for therapeutic development, but also the impact NeoStem will make in the Cambridge community. [See the full press release.](#)

In the coming months, NeoStem seeks volunteers to participate in a research study on VSEL™ technology by donating their cells to the project. Volunteers are compensated and should contact Bryan Prentice at 1.617.873.0808 ext. 302.

## ProHealth Care Associates, L.L.P.

ProHEALTH, one of the largest integrated physician group practices in the New York Metropolitan area and one of the first Collection Centers to join the NeoStem Adult Stem Cell Collection Center Network, continues to offer adult stem cell collection for future use in its state-of-the-art facility. ProHEALTH has been very busy as the first member of the network to enroll VSEL™ technology research study participants. In September 2009 the first research donor was collected and, to date, over thirty study participants have been collected at ProHEALTH. Data from this study contributes to our understanding of how quantities of a person's VSEs (very small embryonic-like stem cells) are affected by age. ProHEALTH's commitment to the highest standard of patient care is reflected in the variety of services and treatments offered, coupled with the most advanced technology available. ProHEALTH is determined to be a leader in the medical field and on the cutting edge of the latest medical developments.

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## Recent News From NeoStem

## Breakthrough Partnership with the Vatican's Pontifical Council for Culture

In a press briefing in New York on May 26, Reverend Tomasz Trafny of the Vatican's Pontifical Council for Culture and Dr. Robin Smith, CEO of NeoStem, announced what Reverend Trafny characterized as the Vatican's first-ever contractual collaboration with an outside commercial venture to advance stem cell research – adult stem cell research. Reverend Trafny also revealed that the Pontifical Council for Culture, through its charitable foundation STOQ International, is making an economic commitment of one million dollars to start its collaboration with NeoStem.



This initiative will partner NeoStem's and the Vatican's charitable organizations to expand research and raise awareness of adult stem cell therapies. The initiative will entail work on a variety of collaborative activities with the goal of advancing scientific research on adult stem cells and exploring their clinical application in the field of regenerative medicine, as well as the cultural impact of such research.

In addition to the breakthrough research anticipated to occur as part of this partnership, the Vatican and NeoStem will spearhead an education campaign geared towards generating awareness of the cultural relevance of such a fundamental shift in medical treatment options, particularly with regard to the impact on theological and ethical issues.

One of the highlights of this partnership will be a three day International Conference at the Vatican on adult stem cell research, including VSEL™ technology, that will focus on medical research presentations and theological and philosophical considerations and implications of scientific achievements that is planned for November 2011.

The charitable organizations from both partners that specifically will drive activity are the *Stem for Life Foundation* that NeoStem participated in founding, and the Pontifical Council's Foundation, called STOQ International (*Science Theology and the Ontological Ques*).

"Considering the potential implication of scientific investigation, medical applicability and the cultural impact of research on adult stem cells, we view the collaboration with NeoStem as a critical effort," said Trafny. "Through educational initiatives with NeoStem and sponsorship of scientific research programs involving cutting edge adult stem cell science which does not hurt human life, we come one step closer to a breakthrough that can relieve needless human suffering."

This event received significant media coverage, including New York 1 News, the New York Daily News, Fox News, Portfolio, and more. [See the full press release.](#)

## NeoStem to Receive \$700,000 from the U.S. Army's Medical Research and Materiel Command to Advance Adult Stem Cell Therapies in Treating Traumatic Wounds

On July 12, NeoStem announced that it has been awarded a \$700,000 contract from the U.S. Army Medical Research and Materiel Command, Telemedicine and Advanced Technology Research Center (USAMRMC-TATRC). This contract is for the purpose of evaluating the use of topically applied bone marrow-derived adult mesenchymal stem cells (MSCs) for rapid wound healing. The Company previously announced that this funding was included in the Department of Defense FY09 Appropriations Bill and will begin receiving funds to initiate the program in 2010.

"NeoStem is thrilled to have the United States Government's support to advance our technology and is honored to become part of TATRC's regenerative medicine portfolio. It is our goal with this important project to leverage adult stem cell technology to help our soldiers avoid amputations and immobilization from injuries that they may sustain while fighting for our country. We understand the urgent need to improve regenerative medicine capabilities and reach ultimate medical solutions. Wound healing could represent just the beginning of more collaborative projects involving other clinical indications, such as spinal cord injuries and retinal damage, both of which affect American warriors who serve our country in the global war on terrorism," said Robin Smith, M.D., Chairman of the Board and Chief Executive Officer of NeoStem. "These federal monies will allow us to intensify our efforts to expand the potential impact of adult stem cells, including very small embryonic-like stem cells for which we have an exclusive license, in wound healing and other areas of regenerative medicine in general in an effort to improve tissue repair and decrease overall medical costs," she continued.

Vincent Falanga, M.D., F.A.C.P., Professor, Boston University School of Medicine and Chairman and Program Director at Roger Williams Medical Center, who is to be Co-Principal Investigator for this study, endorsed Dr. Smith's statement adding, "Adult mesenchymal stem cells (MSCs) and very small embryonic-like (VSEL) stem cells can be harvested with relative ease from individuals. Our studies indicate that an individual's own (autologous) stem cells can be highly successful in healing wounded tissues and in regenerative processes. Together with the wound delivery methods we have developed, these stem cells could bring about a quantum step forward in the way we treat non-healing chronic wounds and many types of injuries, both in the civilian and military population." [See the full press release.](#)

## NeoStem Rings Opening Bell at New York Stock Exchange



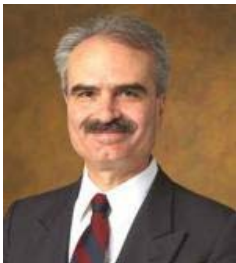
On Thursday, May 26, NeoStem's CEO, Robin Smith, M.D., rang the opening bell at the New York Stock Exchange in New York City.

"We are honored to be back at the NYSE to ring the opening bell in celebration of a key milestone in the Company's history, our recent collaboration with the Vatican's Pontifical Council for Culture to advance the understanding of adult stem cells and the broad ethical, moral and therapeutic implications," said Dr. Smith. "I want to thank all of our dedicated employees, partners and shareholders for contributing to the Company's accomplishments and supporting our strategic vision over the past year.

NeoStem had previously rung the opening bell at the American Stock Exchange (now part of the NYSE) in August 2007. "In the past two and half years, we have transformed from a leading adult stem cell collection and storage provider in the U.S. to an international company with multiple commercial revenues streams from adult stem cell banking, stem cell therapeutics and pharmaceuticals." Added Dr. Smith. "I look forward to sharing our exciting future as we advance our leadership in developing adult stem cell therapies to help revolutionize the field of medicine." [See the full press release.](#)

## NeoStem Adds Distinguished Researcher to its World-Class Scientific Advisory Board

On July 1, NeoStem announced that it has appointed Roberto Bolli, M.D., to its Scientific Advisory Board. Dr. Bolli has produced an immense body of stem cell research, including work emphasizing the ability of very small embryonic-like stem cells (VSELs) to regenerate and repair after myocardial infarction. He has received numerous awards and honors, produced over 300 peer-reviewed publications and lectured various audiences on topics related to his cardiovascular research, which has spanned three decades. Dr. Bolli currently serves as Chief of the Division of Cardiology at the University of Louisville and is Director at the school's Institute of Molecular Cardiology.



Wayne A. Marasco, M.D., Ph.D., chair of NeoStem's Scientific Advisory Board, said, "We are extremely pleased to have Dr. Bolli join our advisory team. His in-depth understanding of the intricacies of VSELs and their potential to regenerate damaged heart tissue compliments well our goal of commercializing VSEL™ technology to improve the lives of the multitudes of heart failure sufferers in the US and China."

Dr. Bolli followed, "I am excited to join the Scientific Advisory Board of an innovative, forward-looking company like NeoStem and be part of the team of thought leaders to develop VSEL™ applications for cardiovascular disease. Not only has the Company put together a promising base of technology for stem cell treatment in orthopaedics, skin rejuvenation and cosmetics, but it is beginning to partner with experts in other areas to facilitate meaningful R&D. This should encourage people to collect, process and store their stem cells through NeoStem's existing network in anticipation of a variety of future personalized medicine applications." [See the full press release.](#)

## Spring Presentations by NeoStem Management

Management members from NeoStem have been active in presenting and taking part in information exchange with other experts in the field.

- **On April 19, NeoStem's Vice President of Regenerative Medicine, Drug Development and Regulatory Affairs, Alan Harris, MD, PhD, moderated a panel discussion at the New York Biotechnology Association 2010 Annual Meeting entitled "Adult Autologous Stem Cell Therapy vs Allogeneic Stem Cell Therapy"** which featured NeoStem's CEO, Dr. Robin Smith as a participant. The panel members explored the differences between autologous (one's own) and allogeneic (donated) stem cell based therapies, including the application of adult autologous VSEL™ technology. [See the full press release.](#)
- **On May 28, NeoStem's Director of Clinical Affairs and Apheresis, Lee Clough, BSN, RN, HP (ASCP) presented on "Leaders Developing Leaders" at the American Society for Apheresis 2010 Annual Meeting in New Orleans.** Based on her experience at NeoStem and prior work at Children's National Medical Center as the Manager of the Blood Donor Center and Therapeutic Apheresis, Ms. Clough discussed how to effectively combine the necessary technical skills and critical leadership skills to successfully manage internal and external relationships in apheresis medicine. [See the full press release.](#)
- **On June 1, Dr. Alan Harris participated in a panel discussion on "Adult versus Embryonic" stem cells at the Stem Cell Investor & Executive Networking Conference Event (SCIENCE) in New York City.** NeoStem CEO, Dr. Robin Smith also participated at this event in a discussion on "Autologous Approaches" to stem cell therapy. [See the full press release.](#)
- **On June 17, a poster authored by NeoStem-affiliated scientists was presented at the International Society for Stem Cell Research (ISSCR) 8th Annual Meeting in San Francisco.** Authors of the abstract, entitled "Mobilization and Isolation of Human Very Small Embryonic-Like Stem Cells (VSELs) from Peripheral Blood" included Dr. Mariusz Ratajczak, M.D., Ph.D., Director of the Stem Cell Biology Program at University of Louisville, Dr. Wayne A. Marasco, M.D., Ph.D., Chairman of NeoStem's Scientific Advisory Board, Denis O. Rodgers, Ph.D., MSC, Director of Stem Cell Science at NeoStem, and Satish Medicetty, Ph.D., formerly Director of Stem Cell Research & Laboratory Operations at NeoStem. [See the full press release.](#)

## Autologous Stem Cell Transplantation Effective in Treating Common Autoimmune Diseases

A large body of evidence demonstrates that autologous stem cell transplantation is effective in treating autoimmune diseases. Autologous stem cell transplantation is already a proven and standard treatment for certain hematologic and oncologic diseases.

Autoimmune diseases are a large group of conditions in which patients' immune cells attack their own tissue components. In severe cases, autologous stem cell therapy proves to be a critical part of a treatment strategy. The "resetting" strategy involves various levels of conditioning ranging from mild ablation (lymphoablation) to reduce T-lymphocytes to myeloablation that wipes out a patient's existing auto-reactive immune cells and cells in the bone marrow (often by high-dose cyclophosphamide) and then rebuilding the patient's immune system with autologous stem cell transplantation.

Investigators who were members of the European Group for Blood and Marrow Transplantation (EBMT) and the European League Against Rheumatism (EULAR) have been accumulating data obtained from applying autologous stem cell transplantation to the treatment of severe autoimmune diseases. In the last 12 years, more than 900 patients with autoimmune disease received autologous stem cell transplantation. Autoimmune conditions included multiple sclerosis (353), cutaneous systemic sclerosis (176), rheumatoid arthritis (86), systemic lupus erythematosus (85), and others. Patients were treated in the settings of phase I/II trials and over one third of the patients achieved sustained drug-free remissions. More clinical trials (including phase III trials) are currently ongoing. A list of these trials can be seen at <http://www.clinicaltrials.gov/ct2/results?term=autologous+stem+cell+autoimmune+disease>.

Source: Tyndall A, Gratwohl A. (University of Basel, Switzerland.) Adult stem cell transplantation in autoimmune disease. *Current Opinion in Hematology* 16:285-291, 2009.

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## Stem Cell Overview

### Adult Stem Cells and Stem Cell Health

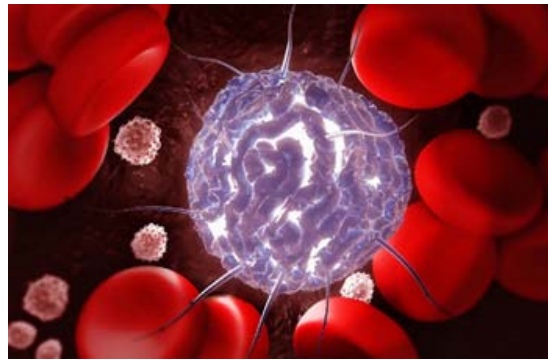
#### An Overview by Dr. Robin L. Smith

##### What Are Adult Stem Cells? Why Do They Matter?

Stem cells continually renew and rejuvenate tissue as they age and or become injured. Stem cells are our bodies' natural repair mechanism so cellular therapy is critical to tissue regeneration and even longevity. How do we know this?

Adult stem cells are currently the basis for essentially all successful stem cell therapies. By definition, an adult stem cell is an undifferentiated cell found among differentiated cells in a tissue or organ. It can renew itself, and can differentiate to yield the major specialized cell types of the tissue or organ. The primary roles of adult stem cells in a living organism are to maintain and repair the tissue in which they are found. One population, called hematopoietic stem cells (HSCs) forms all blood cells types in the body. A second population, called bone marrow stromal is a mixed cell population that generates bone, cartilage, fat, and fibrous connective tissue. In general, cells that are now used in therapy are collected from either the bone marrow or the peripheral blood following mobilization with an agent such as granulocyte-colony stimulating factor (G-CSF).

Recent evidence indicates that bone marrow, in addition to the well-described HSCs and stromal cells, contains a heterogeneous population of non-hematopoietic stem cells that contain some very rare cell populations that displays several features of pluripotent stem cells (stem cells which can create almost all cell types) and can differentiate into cells from all three germ layers (the ectoderm, the mesoderm and the endoderm) - Very Small Embryonic-Like (VSEL™) stem cells. The VSEL™ stem cells have been shown to be present in adults and are mobilized from the bone marrow to peripheral blood by agents such as G-CSF. This finding is of great importance since, for the first time, cells with clearly defined characteristics and clear ability to transdifferentiate with high plasticity can be suited for autologous (using your own cells) cell based therapy.



### Why Is Stem Cell Health So Important?

So how do we keep our stem cells healthy? We know that as we age we have fewer stem cells and their quality declines. We know that DNA repair maintains genomic stability and the loss of DNA repair capacity results in genetic instability that may lead to a decline of cellular function and a number of malignancies. Therefore, DNA repair must be part of any anti-aging program. More specifically, anti-aging programs must focus on how to improve the function of DNA and particularly the quality of the DNA in our adult stem cells.

Our genetic inheritance for health and life expectancy is encoded in each of our cells - specifically in the DNA content of our cells. In optimal conditions, DNA copies itself over and over again, making perfect reproductions. As people age, however, their DNA is damaged continually by the environment, poor diet, and physical and emotional stresses that we experience throughout life. DNA begins to reproduce poorly and ultimately stops reproducing itself completely. The result is disease and aging.

Furthermore, the damage to DNA has a direct impact on another key component that is responsible for aging; stem cell pool reserves. Adult stem cells have been shown to be present in many different body tissues, including adult adipose tissue, neuronal tissue, immune tissue, and gastrointestinal tissue. Adult stem cells have the potential to re-differentiate and restore the aging and non-functional tissues that are damaged by the many aspects of aging itself. With continued damage and poor repair of DNA, the genetic machinery of DNA of the stem cells are also injured. Its regenerative and restorative capacities are therefore lost over time.

Aging research also suggests that the body is built for much greater longevity and self-repair than previous research suggested. Moreover, we can regulate which aging genes to "switch off" and which to "switch on" thereby altering how our genes are "expressed" and influence how we age, the quality of our health, and, extrapolating from new research, very likely how long we will live. Intervention can improve environment or programming induced decline in the DNA repair function in an effort to increase function and reserve, delay aging and reduce incidence of stem cell failures and carcinogenesis.

Some nutraceuticals have been designed to improve the ratio of DNA repair over DNA damage, resulting in fewer cell mutations, more accurate cell copies during cell replication and improved regeneration and rejuvenation of tissues. Some nutraceuticals, such as AIO, were designed to optimize health, including stem cells, within all key organ systems. For more information about AIO, please visit [www.neo.myceresliving.com](http://www.neo.myceresliving.com).

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