

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT  
Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): November 17, 2014

**NEOSTEM, INC.**

(Exact Name of Registrant as Specified in Charter)

Delaware  
(State or Other Jurisdiction  
of Incorporation)

001-33650  
(Commission  
File Number)

22-2343568  
(IRS Employer  
Identification No.)

420 Lexington Avenue, Suite 350, New York, New York 10170  
(Address of Principal Executive Offices)(Zip Code)

(212) 584-4180  
Registrant's Telephone Number

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

## Item 7.01 Regulation FD Disclosure.

On Monday, November 17, 2014, NeoStem, Inc. , a Delaware corporation (the “Company” or “NeoStem”), issued a press release announcing initial positive data from its Phase 2 PreSERVE AMI (acute myocardial infarction) Clinical Trial. The press release also announced a conference call and webcast that was held on Tuesday November 18<sup>th</sup> at 8:00 a.m. EST. As described in the press release, investors are able to access the conference call by visiting the Investor Relations section of the Company’s website at [www.neostem.com/investors/investor-events](http://www.neostem.com/investors/investor-events) or by calling 1-855-235-8282, Conference ID 32811273.

NeoStem intends, from time to time, to present and/or distribute to the investment community and utilize at various industry and other conferences a slide presentation. The slide presentation is accessible on NeoStem’s website at [www.neostem.com](http://www.neostem.com) and is attached hereto as Exhibit 99.2. NeoStem undertakes no obligation to update, supplement or amend the materials attached hereto as Exhibit 99.2.

In accordance with General Instruction B.2 of Form 8-K, the information in this Item 7.01 of this Current Report on Form 8-K, including Exhibits 99.1 and 99.2, shall not be deemed “filed” for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Exchange Act or the Securities Act of 1933, as amended, except as shall be expressly set forth by reference in such a filing.

### Forward Looking Statements

This Current Report on Form 8-K, including Exhibits 99.1 and 99.2 hereto, contain “forward-looking” statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are typically preceded by words such as “believes,” “expects,” “anticipates,” “intends,” “will,” “may,” “should,” or similar expressions, although some forward-looking statements are expressed differently. Forward-looking statements represent the Company’s management’s judgment regarding future events. Although the Company believes that the expectations reflected in such forward-looking statements are reasonable, the Company can give no assurance that such expectations will prove to be correct. All statement other than statements of historical fact included in the Current Report on Form 8-K are forward-looking statements. The Company cannot guarantee the accuracy of the forward-looking statements, and you should be aware that the Company’s actual results could differ materially from those contained in the forward-looking statements due to a number of factors, including the statements under “Risk Factors” contained in the Company’s reports filed with the Securities and Exchange Commission.

## Item 9.01 Financial Statements and Exhibits

### (d) Exhibits

Exhibit No.	Description
99.1	Press Release dated November 17, 2014*
99.2	Slide presentation of NeoStem, Inc. dated November 2014*

\*Exhibits 99.1 and 99.2 are furnished as part of this Current Report on Form 8-K.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

**NEOSTEM, INC.**

By: /s/ Catherine M. Vaczy  
Name: Catherine M. Vaczy, Esq.  
Title: General Counsel

Dated: November 18, 2014

## NeoStem Announces Initial Positive Data from Phase 2 PreSERVE AMI Clinical Trial

*Statistically significant mortality benefit observed in patients with acute myocardial infarction (AMI) treated with intracoronary administration of CD34 cells (NBS10; AMR-001) as well as statistically significant relationship between higher cell doses and improvement in ejection fraction and reduced incidence of serious adverse events and a dose-dependent numerical decrease in major adverse cardiac events*

*Conference call scheduled for Tuesday, November 18<sup>th</sup> at 8:00 AM EST*

NEW YORK, Nov. 17, 2014 (GLOBE NEWSWIRE) -- NeoStem, Inc. (Nasdaq:NBS), a biopharmaceutical company developing novel cell based therapeutics, today announced initial positive data from its 161 patient Phase 2 PreSERVE AMI (or acute myocardial infarction) clinical trial. These data are based on all enrolled patients being treated and having received six month follow-up for imaging and twelve month median length follow up for mortality, adverse events, serious adverse events (SAEs) and major adverse cardiac events (MACE).

Highlights of the initial results include:

- A statistically significant mortality benefit ( $p < 0.05$ ) in patients treated with NBS10 (also known as AMR-001) as compared to the placebo group; there were no deaths in the treatment group.
- A statistically significant dose-dependent reduction in SAEs ( $p < 0.05$ ).
- Observation of a dose-dependent numerical decrease in MACE. MACE occurred in 14% of control subjects, in 17% of subjects of who received less than 14 million CD34 cells, in 10% of subjects who received greater than 14 million CD34 cells, and in 7% of subjects who received greater than 20 million CD34 cells.
- When correcting for the time to stent implantation in all subjects, patients treated with CD34 cells were seen to have a statistically significant dose-dependent improvement in their ejection fraction ( $p < 0.05$ ). Independent from time to stent implantation, a statistically significant improvement in ejection fraction ( $p < 0.05$ ) for patients treated with a dose of greater than 20 million CD34 cells compared to placebo was observed.
- No meaningful difference in perfusion, as evidenced by SPECT imaging, between the treatment and the control group from baseline to 6 months in resting total severity score (RTSS) suggesting this may not be a future suitable tool to assess NBS10, which is consistent with U.S. Food and Drug Administration (FDA) guidance that mortality and MACE are the appropriate approvable endpoints to determine efficacy of a cellular therapy for cardiac disease as opposed to imaging endpoints.

"For cardiologists, our key goal is to keep patients from progressing to worsening heart muscle function and death after a major heart attack," said Dr. Arshed A. Quyyumi, Professor of Medicine at Emory University and Lead Principal Investigator of the PreSERVE AMI study. "It is encouraging to see clinically meaningful results this early in the study, and I look forward to future data readouts."

Interestingly, prior to trial enrollment, patients subsequently randomized to the treatment group had experienced a significantly longer time to stent implantation after the onset of symptoms (931 minutes) compared to subjects subsequently randomized to the control group (569 minutes). This longer interval to reperfusion would ordinarily be expected to be associated with worse clinical outcomes.\*

Further supporting the potential efficacy of this product candidate, the results provide evidence that the positive effects observed were due to intracoronary administration of NBS10, and not endogenous CD34 cells. There was no relationship between high bone marrow CD34 cell counts and improvements in MACE, mortality, or ejection fraction in the control group.

"Similar to what was seen in Phase 1, we have observed a relationship between the dose of CD34 cells administered and a positive effect on cardiac function. In our current trial, in addition to improved cardiac function, a CD34 dose-related reduction in serious adverse events was observed, highlighting the potential for clinical benefit," said Dr. Andrew Pecora, Director and Chief Visionary Officer of NeoStem and co-inventor of the core technology upon which NeoStem's Ischemic Repair Program is based.

Dr. Douglas W. Losordo, Chief Medical Officer of NeoStem, stated that, "the demonstration by this study of a statistically significant reduction in mortality and a dose-dependent reduction in overall MACE in treated subjects provides us important direction as we move towards designing a pivotal trial that is consistent with FDA guidance."

NeoStem's subsidiary, PCT (Progenitor Cell Therapy), a leading contract development and manufacturing organization in the cellular therapy industry, developed the manufacturing process for NBS10, and has provided all of the manufacturing of product for both its Phase 1 and Phase 2 trials. Over the last two years, PCT has worked to further optimize the yield of CD34 cells in order to maximize the dose that can be delivered to patients.

"By refining the methods for collecting and purifying CD34 cells for the PreSERVE AMI trial, we believe that we can facilitate providing doses of a sufficient number of CD34 cells for most patients from a single harvest," said Dr. Robert Preti, NeoStem's Chief Scientific Officer, President of PCT, and co-inventor of the core technology upon which NeoStem's Ischemic Repair Program is based. "The Engineering and Innovation Center at PCT continues to refine the process to provide for high quality, scalable and sustainable manufacturing at an optimal cost of goods for wide-scale commercial production."

Patients with AMI are at significant risk of downstream adverse events, including chronic heart failure, recurrent AMI, significant arrhythmias, premature death or acute coronary syndrome. A report from *Agency for Healthcare Research and Quality* (2011) surveyed the most expensive hospitalization conditions by payor, and lists AMI as the sixth most expensive condition treated in U.S. hospitals, with a national hospital bill of more than \$37 billion annually.

"Heart attacks and cardiovascular disease are a significant physical and economic burden on society, and it is encouraging to see what we believe to be a meaningful impact on patient outcomes at this early point in the trial," said Dr. Robin Smith, Chairman and CEO of NeoStem. "While perfusion is important in the pathophysiology of a damaged heart, SPECT imaging may not be sensitive enough to measure differences. Additionally, the FDA has taken the position that such analysis should not be relied upon as an "approvable" endpoint for a cellular therapy for cardiac disease. As we continue to develop NBS10, we will continue to consult with the FDA, external advisors and future partners to determine the best path forward for the future."

As previously announced, the Company plans to conduct an investor conference call and webcast relating to the data tomorrow, Tuesday, November 18<sup>th</sup>, at 8:00 AM EST. Visit the Company's website at [www.neostem.com/investors/investor-events](http://www.neostem.com/investors/investor-events) to access the webcast or call 1-855-235-8282 and provide Conference ID 32811273.

\*Brodie, et al. (2006). Door-to-Balloon Time With Primary Percutaneous Coronary Intervention for Acute Myocardial Infarction Impacts Late Cardiac Mortality in High-Risk Patients and Patients Presenting Early After the Onset of Symptoms. *Journal of the American College of Cardiology*. 47 (2), 289-295.

#### **About NeoStem's Ischemic Repair Program**

NeoStem is developing therapies to address ischemia through its Ischemic Repair Program (the Program), using CD34 cell technology. Ischemia occurs when the supply of oxygenated blood in the body is restricted. The Company's therapeutics seek to reverse this restriction through the development and formation of new blood vessels. The Program's lead product candidate is NBS10, a chemotactic hematopoietic stem cell product comprised of autologous bone marrow derived CD34/CXCR4 cells selected to treat damaged heart muscle following AMI (or heart attack). NBS10 is thought to work by increasing microvascular blood flow in the heart muscle via the development and formation of new blood vessels, thereby reversing the restriction of blood supply caused by a heart attack and rescuing at-risk cardiac tissue from eventual cell death.

#### **About the PreSERVE AMI Clinical Trial**

PreSERVE AMI is a randomized, double-blind, placebo-controlled clinical trial of intracoronary infusion of autologous CD34 cells in patients with left ventricular dysfunction post-ST elevation myocardial infarction (STEMI). The trial included 161 subjects at 60 sites in the United States, randomized 1:1 between treatment and placebo arms. Eligible patients presented with acute STEMI, had successful stenting of the infarct-related artery and had left ventricular dysfunction 4 days after AMI. Primary endpoints include occurrence of SAEs and MACE (defined as cardiovascular death, re-infarction, heart failure hospitalization, and coronary revascularization) through 3 year follow-up, occurrence of SAEs through 3 year follow-up, and 6-month change in myocardial perfusion (RTSS) measured quantitatively by gated SPECT myocardial perfusion imaging. Other endpoints include cardiovascular magnetic imaging resonance (CMR) to measure left ventricular ejection fraction (LVEF), left ventricular end-systolic volume (LVESV), left ventricular end-systolic diameter (LVEDV), regional myocardial strain, infarct/peri-infarct regional wall motion abnormalities and infarct size (baseline and six months) and quality of life measures (KCCQ and SAQ). While all 6 month data has been collected, it is subject to ongoing analysis, and results reported at this time, although promising, are preliminary. There can be no assurance that further analysis may not reveal negative, or less promising, results.

#### **About NeoStem, Inc.**

NeoStem is a biopharmaceutical company pursuing the preservation and enhancement of human health globally through the development of cell based therapeutics that prevent, treat or cure disease by repairing and replacing damaged or aged tissue, cells and organs and restoring their normal function. The business includes the development of novel proprietary cell therapy products as well as a revenue-generating contract development and manufacturing service business. This combination has

created an organization with unique capabilities for cost effective in-house product development and immediate revenue and cash flow generation. [www.neostem.com](http://www.neostem.com)

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

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements reflect management's current expectations, as of the date of this press release, and involve certain risks and uncertainties. Forward-looking statements include statements herein with respect to the successful execution of the Company's business strategy, the Company's ability to develop and grow its business, the successful development of cellular therapies with respect to the Company's research and development and clinical evaluation efforts in connection with the Company's Targeted Immunotherapy Program, Ischemic Repair Program (including NBS10 for AMI), Immune Modulation Program and other cell therapies, the future of the regenerative medicine industry and the role of stem cells and cellular therapy in that industry, and the performance and planned expansion of the Company's contract development and manufacturing business. The Company's actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors. Factors that could cause future results to materially differ from the recent results or those projected in forward-looking statements include the "Risk Factors" described in the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission ("SEC") on March 13, 2014, the Company's Current Report on Form 8-K filed with the SEC on May 8, 2014 and in the Company's other periodic filings with the SEC. The Company's further development is highly dependent on future medical and research developments and market acceptance, which is outside of its control.

CONTACT: Investor Contact:  
LifeSci Advisors, LLC  
Michael Rice  
Founding Partner  
Phone: +1-646-597-6979  
Email: [mrice@lifesciadvisors.com](mailto:mrice@lifesciadvisors.com)

Media Contact:  
NeoStem, Inc.  
Eric Powers  
Manager of Communications and Marketing  
Phone: +1-212-584-4173  
Email: [epowers@neostem.com](mailto:epowers@neostem.com)

---



---

**INVESTOR  
PRESENTATION**

---

NASDAQ: NBS  
NOVEMBER 2014



**TRANSFORMING MEDICINE**

# FORWARD-LOOKING STATEMENTS



This presentation contains "forward-looking" statements within the meaning of the Private Securities Litigation Reform Act of 1995, as well as historical information. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements, or industry results, to be materially different from anticipated results, performance or achievements expressed or implied by such forward-looking statements. When used in this presentation, statements that are not statements of current or historical fact may be deemed to be forward-looking statements. Without limiting the foregoing, the words "plan," "intend," "may," "will," "expect," "believe," "could," "anticipate," "estimate," or "continue" or similar expressions or other variations or comparable terminology are intended to identify such forward-looking statements, although some forward-looking statements are expressed differently. We remind readers that forward-looking statements are merely predictions and therefore inherently subject to uncertainties and other factors and involve known and unknown risks that could cause the actual results, performance, levels of activity or our achievements or industry results, to be materially different from any future results, performance levels of activity or our achievements or industry results expressed or implied by such forward-looking statements. Such forward looking statements appear in this presentation. Factors that could cause our actual results to differ materially from anticipated results expressed or implied by forward-looking statements include, among others:

- our ability to obtain sufficient capital or strategic business arrangements to fund our operations and expansion plans, including meeting our financial obligations under various licensing and other strategic arrangements, the funding of our clinical trials for product candidates in our development programs for our Targeted Cancer Immunotherapy Program, our Ischemic Repair Program and our Immune Modulation Program, and the commercialization of the relevant technology;
- our ability to build and maintain the management and human resources infrastructure necessary to support the growth of our business;
- our ability to integrate our acquired businesses successfully and grow such acquired businesses as anticipated, including expanding our PCT business internationally;
- whether a large global market is established for our cellular-based products and services and our ability to capture a meaningful share of this market;
- scientific and medical developments beyond our control;
- our ability to obtain and maintain, as applicable, appropriate governmental licenses, accreditations or certifications or comply with healthcare laws and regulations or any other adverse effect or limitations caused by government regulation of our business;
- whether any of our current or future patent applications result in issued patents, the scope of those patents and our ability to obtain and maintain other rights to technology required or desirable for the conduct of our business; our ability to commercialize products without infringing the claims of third party patents;
- whether any potential strategic or financial benefits of various licensing agreements will be realized;
- the results of our development activities, especially:
  - the results of our planned Intus Phase 3 clinical trial of DC/TC being developed to treat metastatic melanoma;
  - the results of our PreSERVE Phase 2 clinical trial of NBS10 (AMR-001) being developed to treat acute myocardial infarction for which we released initial data on November 17, 2014 and for which all 6 month data has been collected; however it is subject to ongoing analysis, and currently reported results, although promising, are preliminary and there can be no assurance that further analysis may not reveal negative, or less promising, results;
- our ability to complete our other planned clinical trials (or initiate other trials) in accordance with our estimated timelines due to delays associated with enrolling patients due to the novelty of the treatment, the size of the patient population and the need of patients to meet the inclusion criteria of the trial or otherwise;
- the other factors discussed in "Risk Factors" in our Form 10-K filed with the Securities and Exchange Commission ("the SEC") on March 13, 2014, and elsewhere in the Annual Report on Form 10-K; and
- the Company's acquisition of California Stem Cell, Inc. ("CSC Acquisition") and the ongoing operations associated with this new business will subject the Company to additional risks. Our Current Report on Form 8-K filed on May 8, 2014 reporting the closing of the CSC Acquisition contains a discussion of the risk factors related to the CSC Acquisition and our new Targeted Immunotherapy Program.

The factors discussed herein, including those risks described in Item 1A. "Risk Factors" in the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2014, the "Risk Factors" described in the Current Report on Form 8-K filed by the Company on May 8, 2014 and in the Company's other periodic filings with the Securities and Exchange Commission (the "SEC") which are available for review at [www.sec.gov](http://www.sec.gov) under "Search for Company Filings" could cause actual results and developments to be materially different from those expressed or implied by such statements. All forward-looking statements attributable to us are expressly qualified in their entirety by these and other factors. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Except as required by law, the Company undertakes no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.





# NEOSTEM COMPANY OVERVIEW

- Integrated biotechnology company with a strong pipeline based on multiple platform technologies, that includes Phase 2 and 3 assets, and a revenue-generating contract development and manufacturing service business
- Headquarters in New York City
- GMP-compliant facilities in Allendale, NJ; Mountain View, CA; and Irvine, CA
- 168 employees as of September 30, 2014
- Nasdaq CM: NBS
- Market cap: \$186 MM\*
- \$32.8 MM in cash and marketable securities of September 30, 2014

\* As of October 15, 2014, based on a \$5.26 share price



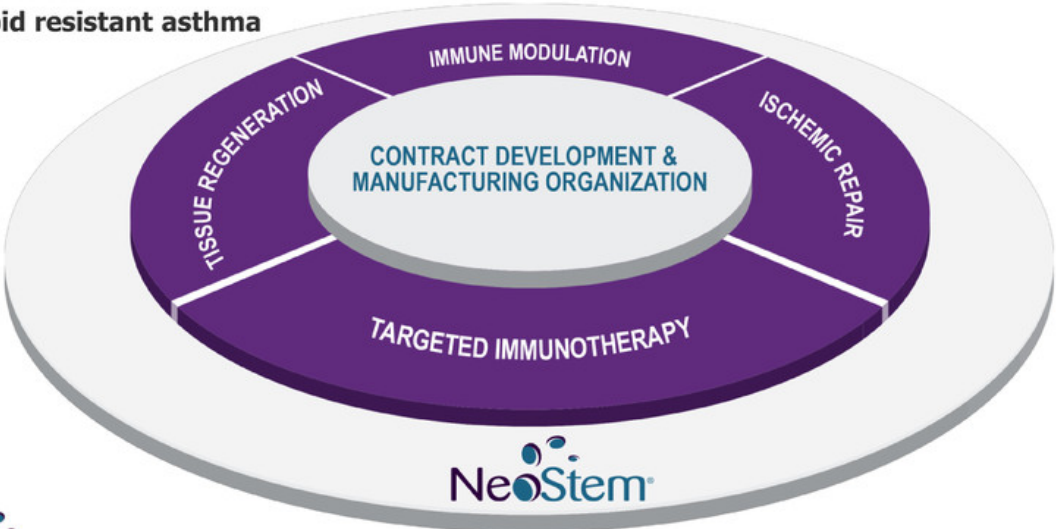
# OUR VALUE PROPOSITION



## A LATE STAGE CLINICAL PIPELINE AND A REVENUE-GENERATING SERVICE BUSINESS IN CELL THERAPY

### TARGET INDICATIONS INCLUDE:

- Stage IV and recurrent Stage III melanoma
- Acute myocardial infarction
- Type 1 diabetes
- Steroid resistant asthma



# MANAGEMENT HIGHLIGHTS



**Robin Smith, MD**  
**Chief Executive Officer**

- Leading NeoStem since 2006, completed six acquisitions and one divestiture

**Robert Dickey IV**  
**Chief Financial Officer**

- Former investment banker (Lehman Brothers)
- Former CFO at StemCyte, a stem cell company

**Douglas W. Losordo, MD**  
**Chief Medical Officer**

- Leader in cell therapy research and renowned cardiologist (Baxter, Northwestern University)

**Andrew L. Pecora, MD**  
**Chief Visionary Officer**

- Chief Innovations Officer at John Theurer Cancer Center
- Co-founder of PCT

**Robert A. Preti, PhD**  
**Chief Scientific Officer, President of PCT**

- Leading authority on cell engineering (30+ papers published)
- Co-founder of PCT

**Stephen W. Potter**  
**Executive Vice President**

- Former Senior VP Operations & Corporate Development, Osiris Therapeutics (approval of Prochymal®, first-ever stem cell drug therapy)
- Genzyme, DuPont Pharmaceuticals, Booz Allen & Hamilton



# DEVELOPMENT HIGHLIGHTS: MULTIPLE PLATFORM TECHNOLOGIES



A PORTFOLIO OF CELL THERAPY PRODUCTS IN DEVELOPMENT THAT LEVERAGE THE BODY'S NATURAL ABILITY TO HEAL AND FIGHT DISEASE



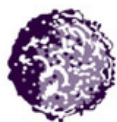
**TARGETED CANCER  
IMMUNOTHERAPY  
PROGRAM**

- Using DC/TC Technology



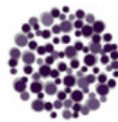
**IMMUNE  
MODULATION  
PROGRAM**

- Using T Regulatory Cell Technology



**ISCHEMIC  
REPAIR  
PROGRAM**

- Using CD34 Cell Technology



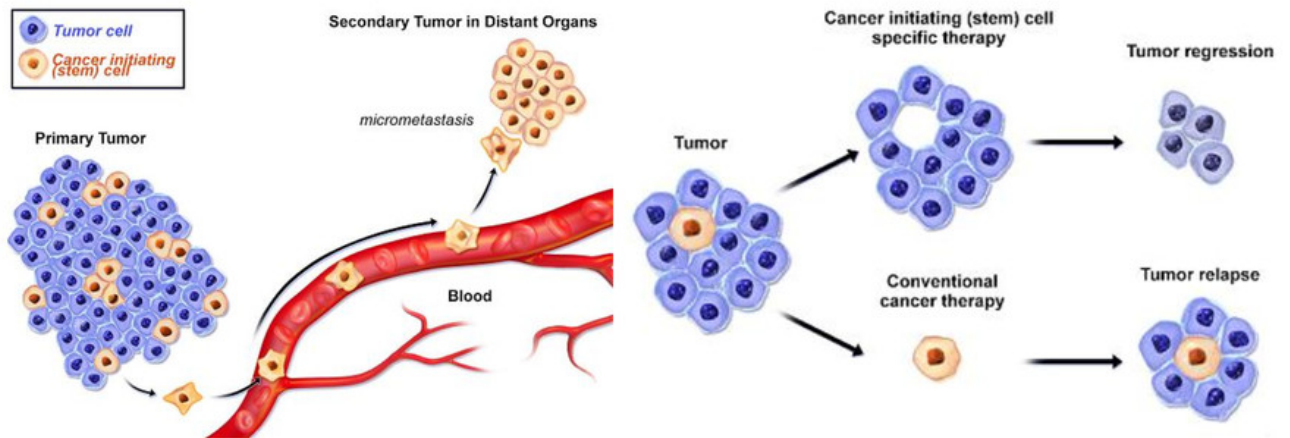
**TISSUE  
REGENERATION  
PROGRAM**

- Using VSEL™ Technology and Stem Cell Derived Growth Factors

# TARGETED CANCER IMMUNOTHERAPY PROGRAM RATIONALE



Cancer initiating (stem) cells\* can move through the blood stream to form new metastases and grow to form new tumors



- Once isolated from patient's tumor, cancer initiating cells provide potent signature antigens to educate and direct the immune system
- Our immunotherapy program uniquely targets the patient's cancer initiating cells which are otherwise capable of reconstituting the tumor

# FIRST TARGET INDICATION: MELANOMA



## BASICS OF MELANOMA

- Most lethal form of skin cancer
- Most often caused by unrepaired DNA damage to skin cells from UV radiation
- 76,100 estimated new cases per year in U.S.<sup>1</sup>
- Kills an estimated 9,710 in U.S. annually<sup>1</sup>

## SURVIVAL RATE

- Stage IV metastatic melanoma – 15% five-year survival rate with current therapies<sup>2</sup>

## CURRENT MAJOR-MARKET\* LANDSCAPE FOR MELANOMA

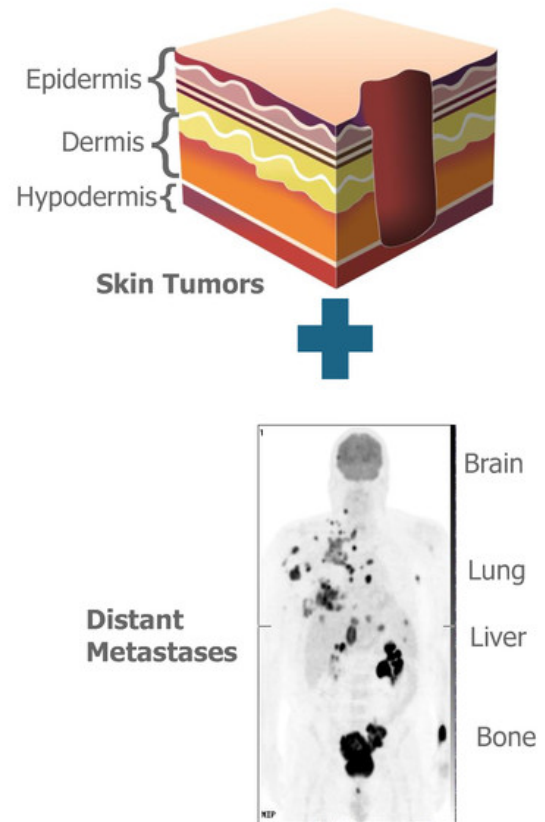
- \$950 million market size
- 76% of cost is spent on immunotherapies

1. National Cancer Institute – 2014 SEER

2. AJCC Cancer Staging 2010 (based on 17 academic centers) (Five year data for recently approved melanoma immunotherapies is not yet reflected)

All other data from *Decision Resources Malignant Melanoma – 2013 Report*

\* U.S., Europe and Japan in 2012



# MELANOMA: STANDARD OF CARE

## SUBOPTIMAL EFFICACY, POOR TOLERABILITY, HIGH COST



THERAPY	2 YR OVERALL SURVIVAL	SIDE EFFECTS	ESTIMATED COST
Proleukin (Interleukin-2) <i>Prometheus Labs</i>	25% <sup>1</sup>	Capillary Leak Syndrome Impaired Neutrophil Function Disseminated Infection Sepsis	>\$100,000
Yervoy (Ipilimumab) (CTLA-4 inhibitor) <i>Bristol Myers – Squibb</i>	28% <sup>2</sup>	Enterocolitis Hepatitis Dermatitis Neuropathy Endocrinopathy GI Disorders	>\$100,000
Oral BRAF inhibitors & MEK inhibitors	28% <sup>3</sup>	Cutaneous Malignancies Hypersensitivity Reactions Tumor Promotion in BRAF wild-type QT Prolongation Hepatotoxicity	>\$100,000
Chemotherapy	15% <sup>4</sup>	Anemia Fatigue Risk of Infection Nausea/Diarrhea/Constipation	~\$50,000

1. Eton *JCO* 2002, Atkins *JCO* 2008

2. Hodi *NEJM* 2010, Robert *NEJM* 2010, Wolchok *Ann Oncol* 2013

3. Estimated

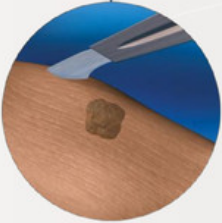
4. Chapman *JCO* 1999, Middleton *JCO* 2000, Ranson *JCO* 2007, Robert *NEJM* 2011, Chapman *NEJM* 2011

(Derived from a range of 9 – 20%)

# TARGETED CANCER IMMUNOTHERAPY TREATMENT PROCESS

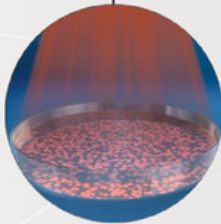


Step 1



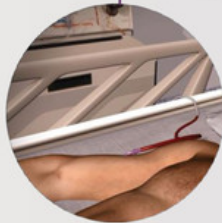
**STEP 1:**  
Treatment begins with the surgical resection of the patient's tumor

Step 2



**STEP 2:  
(DAY 0 - WEEK 6)**  
The cancer initiating (stem) cells from the tumor are isolated, expanded, and irradiated to render them inactive

Step 3



**STEP 3:  
(PRIOR TO WEEK 6)**  
Patient undergoes leukapheresis, a procedure in which monocytes are extracted from circulating blood

Step 4



**STEP 4: (WEEK 6)**  
Immature dendritic cells, derived from monocytes, are exposed to the irradiated cancer initiating cells and learn to identify cancer initiating cells based on their antigen signature

Step 5



**STEP 5:  
(WEEK 6 - WEEK 8)**  
Partially matured, antigen-loaded dendritic cells are cryopreserved, quality controlled, then shipped to the clinical site

Step 6



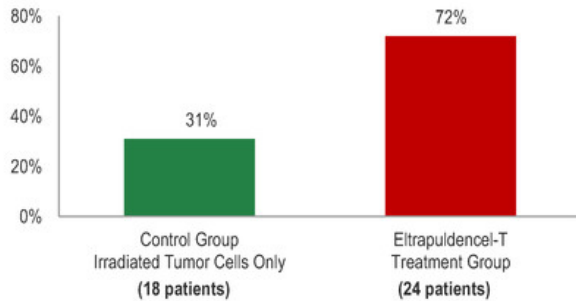
**STEP 6:**  
Treatment begins (eight injections administered over six months)



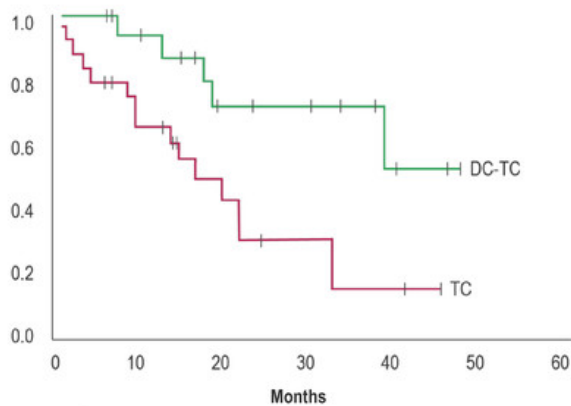
# PHASE 2 RESULTS FOR ELTRAPULDENCEL-T FOR METASTATIC MELANOMA



## 2 YEAR OVERALL SURVIVAL



## PROPORTION SURVIVING



Dillman, et al. *Journal Immunotherapy* 2012

## TRIAL DESIGN:

- Treatment group: EltrapuldenceL-T (autologous dendritic cells pulsed with irradiated tumor cells in GM-CSF)
- Control group: Irradiated tumor cells only
- Stratified by whether regional or distant metastatic disease and whether measurable disease.
- 80% power to detect 40% difference in survival. 90% power to detect a 50% difference in survival.
- P = 0.007
- Hazard ratio = 0.27

## TRIAL RESULTS:

- First accrual Oct. 2007
- Last randomized Feb. 2011
- 42 patients randomized
- **No serious adverse events** related to immunotherapy
  - Minor local injection site reactions

# FEATURES AND INTENDED EFFECTS OF TARGETED CANCER IMMUNOTHERAPY PROGRAM



## FEATURES:

## INTENDED EFFECTS:

Designed to present the entire spectrum of patient-specific antigens that are expressed on cancer initiating (stem) cells for the immune system to target	Designed to address cancer heterogeneity by including tumor-associated antigens unique to that patient
Designed to target the cancer initiating cells that express antigens associated with mutated cell lineages	Focuses on the fraction of tumor cells that cause recurrence and metastasis of cancer rather than on more differentiated cells
Designed to induce or enhance persistent T-cell immunity with activated dendritic cells	Potential for improved anti-tumor immune response compared to using tumor cells alone or specific tumor antigens as the source of tumor-associated antigens
Designed to act through natural anti-tumor pathways of humoral and cellular immunity	Potential for less toxicity compared to other anti-melanoma therapies

### Adverse events seen in development to date:

- Serious adverse events in Phase 2 trials included AMI (1 patient), seizures (1 patient), acute myelogenous leukemia (1 patient), anaphylactoid reaction (1 patient) – judged unrelated to study participation
- Minor local injection site reactions in most patients



# MELANOMA SCIENTIFIC ADVISORY BOARD



**Robert Dillman, MD**

SAB Administrative Co-Chairman

Vice President, Oncology, NeoStem

**Andrew L. Pecora, MD**

SAB Administrative Co-Chairman

Chief Visionary Officer, NeoStem

Hackensack University Medical Center

---

**Michael B. Atkins, MD**

Georgetown-Lombardi Comprehensive  
Cancer Center

**Lisa H. Butterfield, PhD**

University of Pittsburgh

**Kim Margolin, MD**

Stanford University

**Stephen J. O'Day, MD**

Beverly Hills Cancer Center

**Merrick I. Ross, MD**

University of Texas M.D. Anderson Cancer  
Center

**Jedd D. Wolchok, MD, PhD**

Memorial Sloan Kettering Cancer Center



# INTUS PHASE 3 SPECIAL PROTOCOL ASSESSMENT (SPA) STUDY DESIGN



## STUDY NAME



## TARGET

Patients with Stage IV or recurrent Stage III metastatic melanoma

## LOCATION

United States and potentially Australia & New Zealand, approximately 50 sites

## DESIGN

Double blind, placebo controlled, randomized (2:1), intent to treat analysis, planned enrollment 250 evaluable patients; 80% power to detect 37.5% reduction in risk of death; Hazard ratio=0.625

## ENDPOINT

Overall survival

## TREATMENT GROUP

DC/TC (autologous dendritic cells pulsed with irradiated tumor cells in GM-CSF)

## CONTROL GROUP

Autologous mononuclear cells (MC) in GM-CSF

## SPECIAL PROTOCOL ASSESSMENT (SPA)

Suggests FDA is in agreement with the design, clinical endpoints and planned clinical analysis of this Phase 3 trial. Potential to serve as the basis for a Biologics License Application

## FDA DESIGNATIONS

Fast Track Designation for metastatic melanoma and Orphan Drug Designation

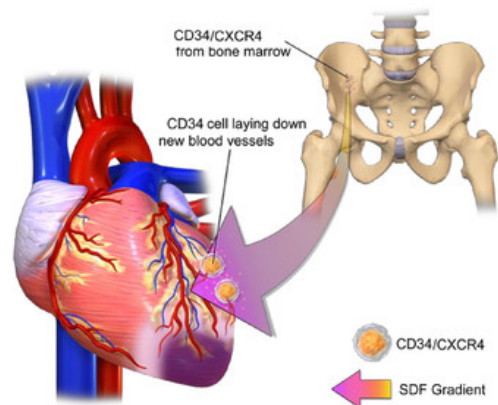


# ISCHEMIC REPAIR PROGRAM

## RATIONALE: TO ENHANCE THE BODY'S NATURAL REPAIR MECHANISM



- Ischemia occurs when the supply of oxygenated blood is restricted
- Program seeks to reverse this restriction through development and formation of new blood vessels
- CD34/CXCR4 expressing cells have been shown to be capable of inducing the development and formation of new blood vessels and preventing heart cell death
- The same natural repair mechanism applies to multiple areas of vascular insufficiency such as:
  - ▶ Acute myocardial infarction (AMI)
  - ▶ Traumatic brain injury
  - ▶ Chronic heart failure
  - ▶ Critical limb ischemia

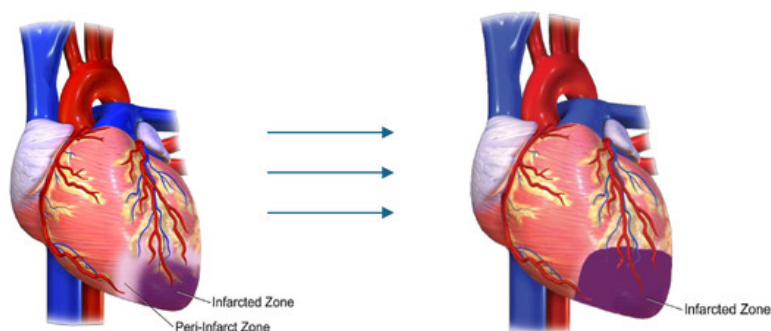


# FIRST TARGET INDICATION: STEMI



- Following a heart attack, apoptosis and progressive cardiomyocyte loss leads to infarct expansion
- ST segment Elevation MI (STEMI) patients are at a high risk of a progressive deterioration in heart muscle function that leads to worsening of cardiac output, morbidity and mortality
- 240,000 STEMI patients/year in US
- Incidence and prevalence is ~1/3 of total AMI events
- Average age of AMI patient in US is 66
- > \$37 billion hospital cost/year in US for AMI

## THE NATURAL PROGRESSION OF DISEASE POST-STEMI



# STEMI: STANDARD OF CARE

## INVASIVE, ASSOCIATED MORBIDITY & MORTALITY



### ■ Emergency care:

- ▶ Administration of antithrombotic therapy, aspirin, beta-blocker, nitroglycerin, and/or morphine
- ▶ Percutaneous coronary intervention - coronary angioplasty and stenting

### ■ Home care:

- ▶ Aspirin, anti-clotting medication, beta-blocker
- ▶ Cholesterol-lowering therapy and lifestyle changes

### ■ Prognosis:

- ▶ Despite improvements in care, prognosis for STEMI unchanged over past 10 years according to AHA<sup>1</sup>
- ▶ One year mortality of 10%<sup>2</sup>
- ▶ 30-day hospital readmission after STEMI is common, even in optimally treated patients<sup>3</sup>

1. AHA 2013 Statistical Update, Circulation 2013

2. "Prognosis after myocardial infarction" - [www.uptodate.com/contents/prognosis-after-myocardial-infarction](http://www.uptodate.com/contents/prognosis-after-myocardial-infarction)

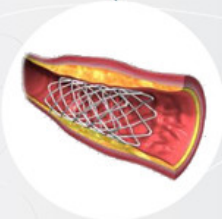
3. Duke Clinical Research Institute



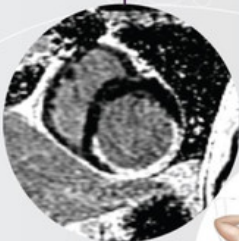
# NBS10 TREATMENT PROCESS\*



DAY 1    DAY 2    DAY 3    DAY 4    DAY 5    DAY 6    DAY 7    DAY 8    DAY 9    DAY 10    DAY 11



**DAY 1:**  
Patient comes to emergency room with heart attack and receives stent

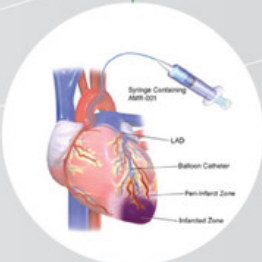


**DAY 4:**  
Cardiac magnetic resonance to assess ventricular function



**DAY 4-9:**  
Mini bone marrow procedure to harvest cells

**DAY 5-9:**  
6-8 hour cell separation process to isolate CD34/CXCR4 cells



**DAY 6-11:**  
Injection of cell therapy into the infarct-related artery

\*Process as per protocol for PreSERVE Phase 2 study



# PRESERVE PHASE 2 STUDY: INITIAL DATA RELEASED



<b>TARGET</b>	Post-AMI patients
<b>KEY INCLUSION CRITERIA</b>	Confirmation of ST Elevation MI (STEMI); ejection fraction $\leq$ 48% at day 4 by CMR; state of the art care post stenting
<b>LOCATION AND NUMBER OF SUBJECTS</b>	United States, 60 centers, 161 patients ( <b>enrollment completed</b> )
<b>DESIGN</b>	Double blind, placebo controlled, randomized (1:1)
<b>PRIMARY ENDPOINTS</b>	Change in cardiac perfusion (RTSS by SPECT) from baseline to 6 months and incidence rates of SAEs (serious adverse events) and MACE (major adverse cardiac events - defined as composite of cardiovascular death, reinfarction, heart failure hospitalization and coronary revascularization)
<b>OTHER ENDPOINTS</b>	To determine preservation of cardiac function and clinical outcomes: <ul style="list-style-type: none"><li>■ CMR to measure LVEF, LVESV, LVEDV, regional myocardial strain, infarct/peri-infarct regional wall motion abnormalities, and infarct size (baseline and 6 months)</li><li>■ Quality of Life measures: (KCCQ &amp; SAQ)</li></ul>
<b>TREATMENT</b>	Single dose via infarct related artery with minimum dose for release $\geq$ 10MM CD34+ cells



# INITIAL PHASE 2 RESULTS: 1 YEAR MORTALITY BENEFIT & DOSE-DEPENDENT RELATIONSHIP WITH DECREASE IN SERIOUS ADVERSE EVENTS & IMPROVEMENT IN EJECTION FRACTION



- Results provide preliminary evidence that intracoronary administration of autologous CD34+ cells (NBS10) is:
  - ▶ Safe and well tolerated
  - ▶ Associated with reduced 1-year mortality rate; statistically significant mortality benefit ( $p < 0.05$ )
  - ▶ Associated with a *dose-dependent* reduction in SAEs; statistically significant dose-dependent reduction in SAEs ( $p < 0.05$ )
  - ▶ Associated with no difference at 6 months in myocardial perfusion (based on SPECT imaging)
  - ▶ With correction for the time to stent implantation, is associated with a statistically significant CD34 cell dose-dependent increase in LVEF ( $p < 0.05$ )
  - ▶ Associated with a *dose-dependent* increase in LVEF in the treatment group for patients treated with dose  $> 20$  million CD34 cells; statistically significant ( $p < 0.05$ )

# PHASE 2 RESULTS: MORTALITY AND OVERALL MACE

MACE= DEATH, MI, CHF HOSPITALIZATION, REVASCULARIZATION



Infusion through last follow-up visit

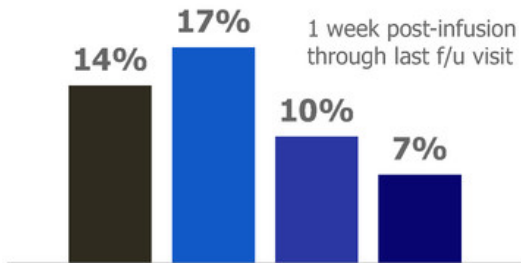
	<b>Placebo</b>	<b>NBS10</b>	<b>p-value*</b>
Death	3 (3.6%)	0 (0%)	<b>0.04</b>
Total MACE	14 (16.9%)	15 (19.2%)	0.66

Subjects with MACE through 6 month follow up of last patient; P-value reflects a z-test \*\*P-value reflects a z-test of the null hypothesis of no difference in mean number of total events against the alternative that treatment group subjects experience fewer total events on average compared to controls.

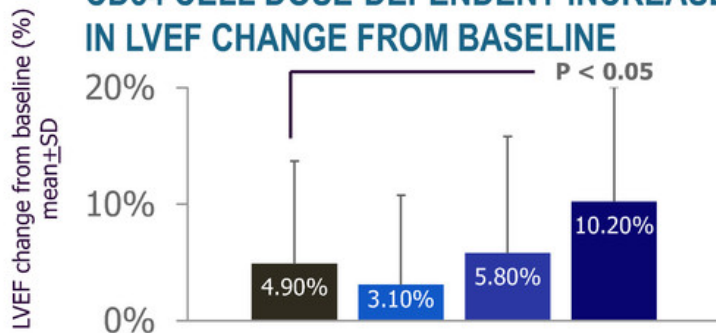
# PHASE 2 RESULTS



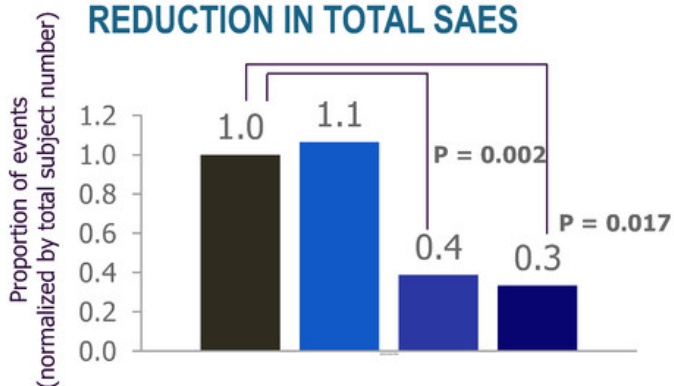
## CD34 CELL DOSE-DEPENDENT REDUCTION IN MACE INCIDENCE



## CD34 CELL DOSE-DEPENDENT INCREASE IN LVEF CHANGE FROM BASELINE



## CD34 CELL DOSE-DEPENDENT REDUCTION IN TOTAL SAEs



## MULTIPLE REGRESSION MODEL WITH CHANGE IN LVEF MODELED AS A FUNCTION OF INFUSED CD34+ CELL DOSE

Parameter	Parameter Estimate (SE)	P-Value
Infused CD34+ Dose	2.21 (1.084)	0.045

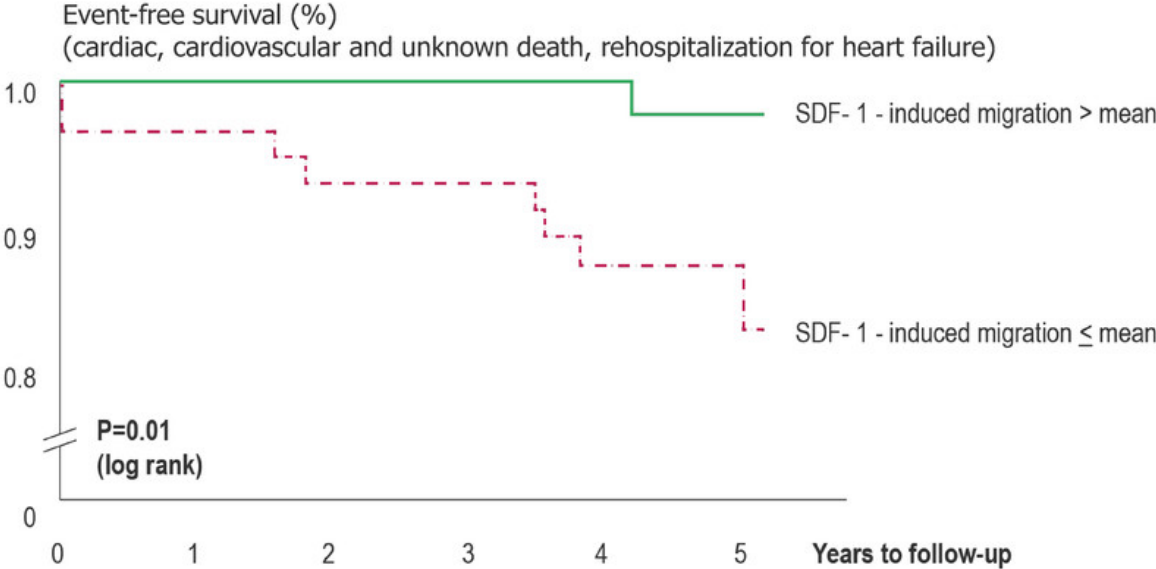
Control (N=83)	>14M (N=31)
<14M (N=47)	>20M (N=15)



# MIGRATORY CAPACITY OF ADMINISTERED CD34 CELLS ASSOCIATED WITH EVENT-FREE SURVIVAL POST AMI



- Recently published study demonstrated administration of autologous SDF-1 migratory CD34 cells, significantly reduces cumulative incidence of major adverse clinical cardiac events following acute myocardial infarction (AMI)



Assmus, B., et al. (2014) Long-term clinical outcome after intracoronary application of bone marrow-derived mononuclear cells for acute myocardial infarction: migratory capacity of administered cells determines event-free survival. *European Heart Journal*



# FEATURES AND INTENDED EFFECTS OF NBS10



## FEATURES:

## INTENDED EFFECTS:

CD34/CXCR4 cells are designed to target viable tissue surrounding the infarcted myocardium (peri-infarct zone) after administration and persist	Mobile cells migrate to targeted tissues
Autologous cells take up residence in the peri-infarct zone, with potential to promote angiogenesis	No immunogenicity risk; Potential for improved blood flow
Cell preparation has a 72 hour shelf life and is infused into patient 5 to 11 days following an acute myocardial infarction (AMI)	Cells are introduced after pro-inflammatory "hot phase" but prior to permanent scar formation; Enhanced likelihood of healthy tissue formation
Infusion into infarct related artery (IRA), not myocardium	Designed to be safer and permit greater distribution

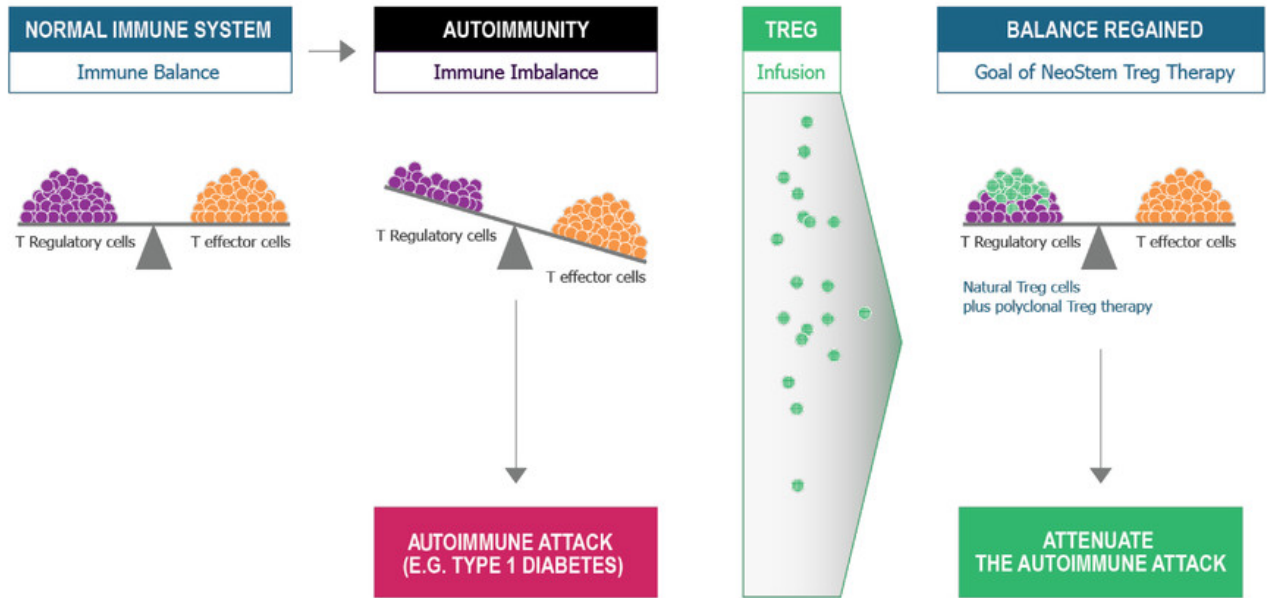
### Adverse events seen in treated Phase 1 patient population:

- One case of congestive heart failure 1 year after cell infusion
- One patient was diagnosed with chronic myelogenous leukemia (CML)
- Two cases of re-stenosis and thrombosis

# IMMUNE MODULATION PROGRAM RATIONALE



TREG THERAPY REPRESENTS A NOVEL APPROACH FOR RESTORING IMMUNE BALANCE BY ENHANCING T REGULATORY CELL NUMBER AND FUNCTION<sup>1</sup>



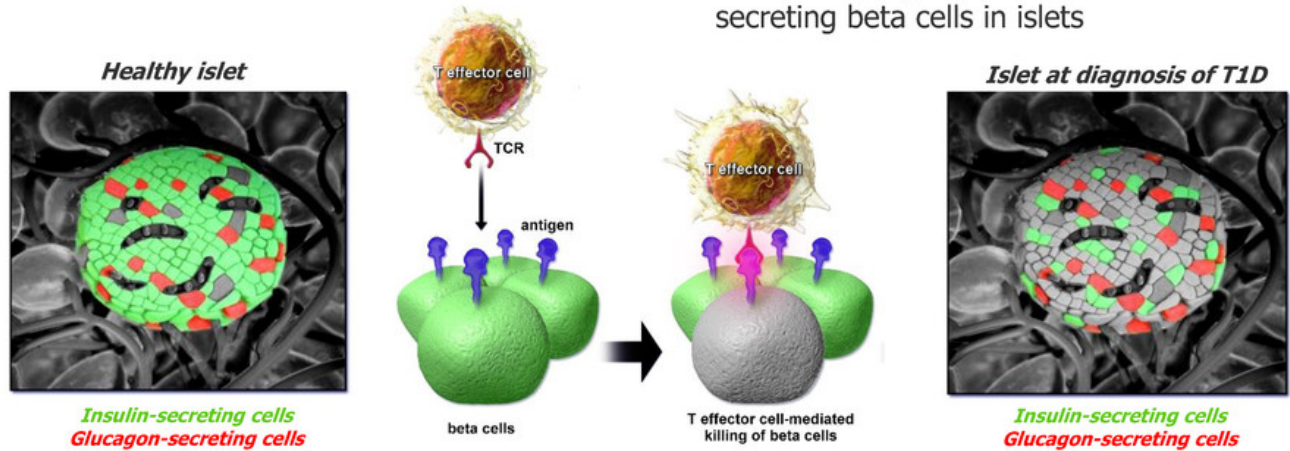
1. Chai, Jian-Guo et al, *Journal of Immunology* 2008; 180;858-869



# FIRST TARGET INDICATION: DIABETES MELLITUS TYPE-1 (T1D)



- Also called insulin dependent diabetes or juvenile diabetes
- Affects >34 million worldwide, 1 in 300 children and more adults
- Economic burden of T1D in the U.S. is estimated at \$14.9 billion
- Autoimmune destruction of insulin-producing (beta cells) of the pancreas
- Diabetes is leading cause of kidney failure, new cases of adult blindness, and non-traumatic lower-limb amputations
- Results in total insulin deficiency
- At time of diagnosis, there are still insulin-secreting beta cells in islets





# T1D: STANDARD OF CARE

## LIFETIME INSULIN DEPENDENCY, COMORBIDITIES

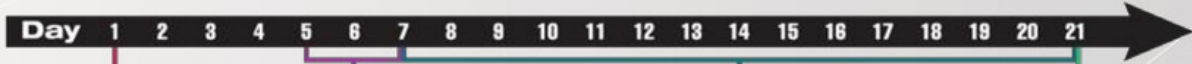


- There is no treatment for T1D – only lifelong insulin therapy to help avoid complications
  - 2 or more injections daily
  - \$2 billion estimated market size for insulin sales in 2017 for T1D alone<sup>1</sup>
- Complications and comorbidities occur, even in patients with good diabetes control:
  - Chronic kidney disease and end-stage renal disease
  - Diabetic macular edema
  - Diabetic ulcers
  - Lipid abnormalities and hypertension
  - Increased risk heart attack and stroke
  - Diabetic neuropathy



1. Burn, Nat Rev Drug Discov, 2010

# T1D TREG TREATMENT PROCESS



**DAY 1:**  
Screening and enrollment



**DAY 5-7:**  
Blood draw from patient

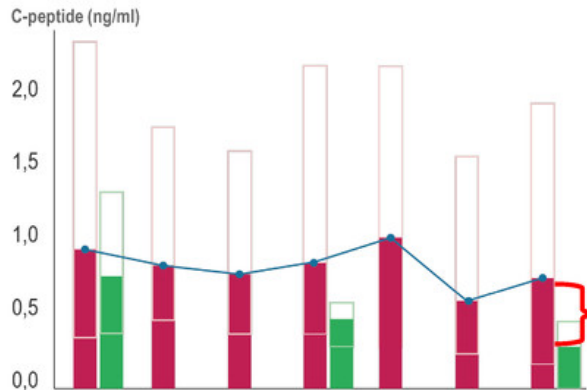


**DAY 7-21:**  
Manufacturing including expansion



**DAY 21:**  
Infusion of Treg therapy to patient

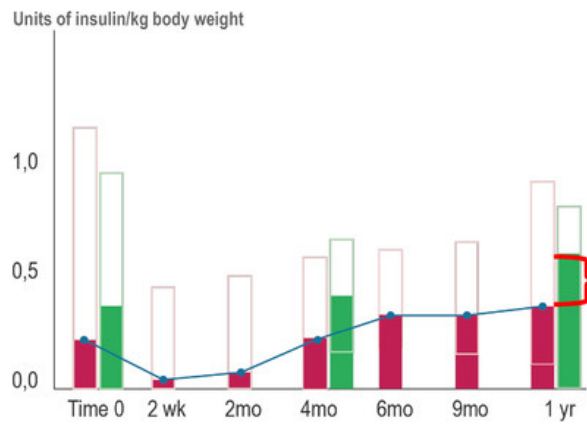
# ADMINISTRATION OF REGULATORY T CELLS PRESERVES BETA CELL FUNCTION IN T1D IN CHILDREN\*



- First human evidence of therapeutic effect of autologous Treg therapy protection of pancreatic function in new onset T1D in children

- One year follow-up: evidence that Treg therapy preserves function of pancreatic islets cells

▶ C-peptide levels stabilized



▶ Reduction of insulin requirements

- 20% of patients able to come off of exogenous insulin four months after treatment

■ Green bars represent control group

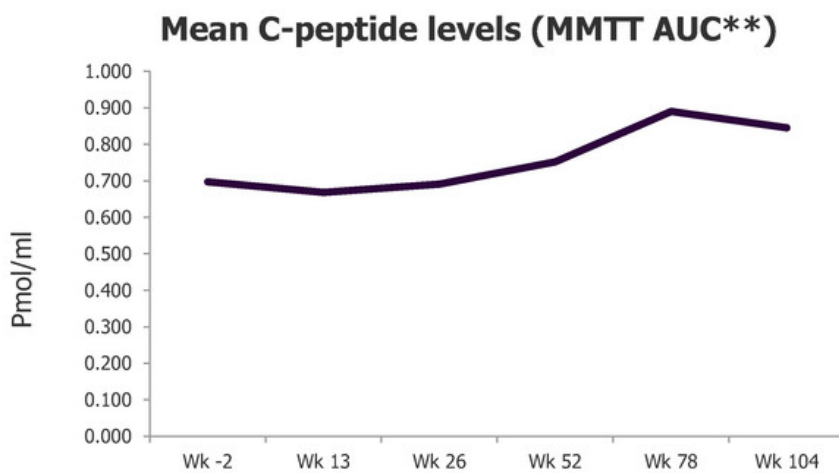
\* Children aged 8-16 in study  
 Regulatory T cells expressing CD4+CD25highCD127-  
 Marek-Trzonkowska N et al. Diabetes Care 2012;35:1817-1820  
 Marek-Trzonkowska N et al. Clinical Immunology 2014



# ADMINISTRATION OF REGULATORY T CELLS\* APPEARS TO BE SAFE IN ADULTS WITH ESTABLISHED T1D



- Preliminary data indicates safety and tolerability
- Infused Tregs detected in peripheral circulation for over 6 months
- Results complement safety and efficacy data from new onset trial in children and informs design of NeoStem's Phase 2 trial in new onset T1D



Summary data of 4 dose cohorts (14 patients) through completed follow up through 104 weeks

\* Regulatory T cells expressing CD4<sup>+</sup>CD25<sup>high</sup>CD127<sup>-</sup>  
\*\* MMTT = Mixed Meal Tolerance Test  
AUC = Area under the curve

Gitelman et al, American Diabetes Association Abstract, 2014





# FEATURES AND INTENDED EFFECTS OF IMMUNE MODULATION PROGRAM



**FEATURES:**

**INTENDED EFFECTS**

Tregs are natural part of immune system	Potential for positive safety profile
Tregs shown in pre-clinical studies to be important in modulating autoimmune disorders and allergic conditions	Platform may be applicable to steroid resistant asthma, rheumatoid arthritis, lupus, multiple sclerosis, organ transplant rejection, graft vs. host disease
Proprietary technology with minority interest by Becton Dickinson 	Intellectual property protection and CMC section that can be used for the investigation of multiple indications
Collaboration with University of California, San Francisco and laboratory of Dr. Jeffrey Bluestone 	Accelerated development by utilizing already-generated UCSF Phase 1 data

**Adverse events seen in development to date:**

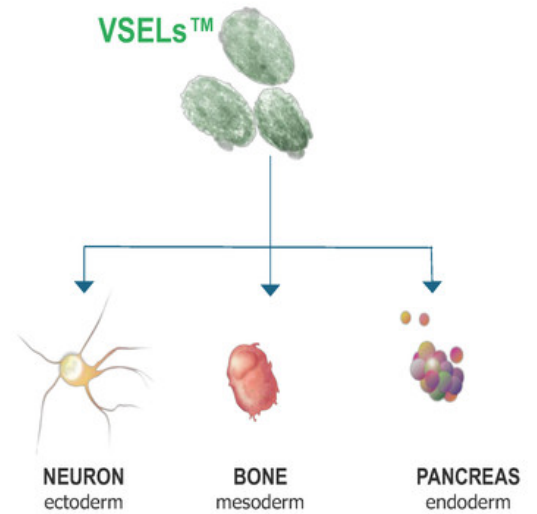
- Serious adverse events in Phase 1 T1D trial included hypoglycemia (2 events in 1 patient) and diabetic ketoacidosis (1 patient) – judged unrelated or unlikely to be related to study participation

# TISSUE REGENERATION PROGRAMS



## VSEL™ TECHNOLOGY: POTENTIAL TO REPAIR DAMAGED TISSUE

- Evaluating therapeutic potential of very small embryonic-like stem cells (VSELS™)
- Research suggests multipotency and multi-lineage differentiation into all basic cell types (mesoderm, ectoderm, endoderm)
- Exploring the development for retinal repair and the treatment of chronic wounds
- \$4.5 million of grants toward preclinical VSEL™ research



## DERMATOLOGY PROGRAM: TOPICAL PRODUCT BASED ON STEM CELL DERIVED GROWTH FACTORS

- Exploring potential for fine lines and wrinkles, psoriasis, and wound care



# INTELLECTUAL PROPERTY



## TARGETED CANCER IMMUNOTHERAPY PROGRAM

- 5 issued patents and 35 pending patents in the U.S. and OUS with coverage including:
  - ▶ Stem cell growth medium and methods of making and using same; Antigen-presenting cancer vaccines; Individualized high purity carcinoma initiating (stem) cells for target indications, methods and use of same; and rapid methods to produce high purity cancer initiating (stem) cells

## ISCHEMIC REPAIR PROGRAM

- Broad and growing patent portfolio supports cardiac conditions and a broad range of other conditions caused by underlying ischemia
- 17 granted composition of matter and methods patents
- 19 patents pending

## IMMUNE MODULATION PROGRAM

- Exclusive rights to 23 issued patents and 9 pending patents covering isolation, activation, expansion and methods of treating or preventing certain conditions and/or diseases using Tregs in U.S. and major international markets
- Includes composition of matter patents and method patents

## TISSUE REGENERATION (VSEL™ TECHNOLOGY)

- In-licensed from the University of Louisville the world-wide patent rights and know-how regarding the isolation, purification and therapeutic use of very small embryonic-like (VSEL™) stem cells



# PCT PROVIDES OUTSOURCED MANUFACTURING CAPABILITIES TO CELL THERAPY INDUSTRY

## ALSO ENABLES DEVELOPMENT OF INTERNAL PIPELINE

- High quality manufacturing capabilities with 15-year track record of success
- Proven efficiencies and reduced capital investment for customers through outsourcing
- Demonstrated regulatory expertise:
  - ▶ 50+ EU and U.S. regulatory filings;
  - ▶ All clinical trial phases including BLA submission and product approval by FDA
- Significant focus on innovation, engineering and automation
- EU product distribution requirement compliant
- Continuing to expand commercial capabilities in the U.S. and internationally



**ALLENDALE, NEW JERSEY** (30,000 ft<sup>2</sup>)  
ISO Class 7 / Class 10,000 suites  
ISO Class 6 / Class 1,000 suite  
Recent expansion of clean room space

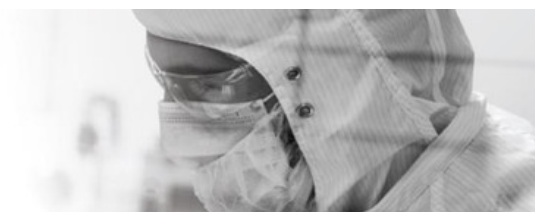
**MOUNTAIN VIEW, CALIFORNIA** (25,000 ft<sup>2</sup>)  
ISO Class 7 / Class 10,000 suites  
Recent expansion of clean room space

**IRVINE, CALIFORNIA** (12,500 ft<sup>2</sup>)  
ISO Class 7 / Class 10,000 suites





# FINANCIAL METRICS



## MARKET METRICS

---

<b>MARKET CAPITALIZATION<sup>1</sup></b>	\$186M
<b>STOCK PRICE<sup>2</sup></b>	\$5.26
<b>52 WEEK RANGE<sup>2</sup></b>	\$4.56 - \$8.29
<b>FLOAT<sup>1</sup></b>	31.2M
<b>INSIDER HOLDINGS<sup>1</sup></b>	11.9%

## FINANCIAL METRICS

---

<b>REVENUE<sup>3</sup></b>	\$4.1M (Third Quarter)
<b>CASH<sup>4</sup></b>	\$32.8M
<b>COMMON SHARES OUTSTANDING<sup>1</sup></b>	35.4M
<b>WARRANTS<sup>1</sup></b>	3.6M (avg. warrant exercise price of \$14.13)
<b>OPTIONS<sup>1</sup></b>	4.5M (avg. option exercise price of \$9.24)

1. As of October 15, 2014 (based on shares outstanding on September 30, 2014)

2. As of October 15, 2014

3. For the three months ended September 30, 2014

4. As of September 30, 2014 (includes marketable securities)



# FUTURE GROWTH DRIVERS



## DEVELOP NOVEL PROPRIETARY CELL THERAPY PRODUCTS

- Leverage unique capabilities for cost effective in-house product development
- Partner select programs at key inflection points
- Grow pipeline and capabilities through strategic acquisition

## EXPAND REVENUE-GENERATING SERVICE BUSINESS

- Grow client base organically and through new service areas
- Expand manufacturing in U.S. and internationally
- Expand into cell therapy tools and technology market

# CONTACT INFORMATION



## **NEOSTEM, INC.**

NASDAQ: NBS

[WWW.NEOSTEM.COM](http://WWW.NEOSTEM.COM)

## **ROBIN SMITH, MD, MBA**

CHAIRMAN & CEO

PHONE: (212) 584-4174

EMAIL: [RSMITH@NEOSTEM.COM](mailto:RSMITH@NEOSTEM.COM)



# APPENDIX



# BOARD OF DIRECTORS



## **Robin Smith, MD, MBA**

Chairman of the Board

- MD – Yale; MBA – The Wharton School
- Formerly President & CEO IP2M, EVP & CMO HealthHelp
- Experience - Trustee of NYU Medical Center; Chairman of the Board of NYU Hospital for Joint Diseases (through November 2009) and Chairman of Stem for Life Foundation

## **Richard Berman**

Independent Director

- BS and MBA – NYU; JD – Boston College
- Over 35 years of venture capital, management, M&A experience
- Experience – Current Board of Directors of Apricus Biosciences, Easylink Services International, Inc., Advaxis, Inc., Broadcaster, Inc., National Investment Managers

## **Drew Bernstein, CPA**

Independent Director

- BS – University of Maryland Business School
- Licensed in State of New York; member AICPA, NYSSCPA and NSA
- Experience – Bernstein & Pinchuk LLP (member of BDO Seidman Alliance); PRC auditing; 200+ real estate transactions with \$3B+ aggregate value; accountant and business advisor

## **Martyn Greenacre, MBA**

Independent Director

- BA – Harvard College; MBA – Harvard Business School
- Experience – Board and executive positions for multiple biopharmaceutical companies; Former CEO of Delsys Pharmaceutical Corporation and Zynaxis Inc; Chairman of the Board of BMP Sunstone Corporation

## **Steven M. Klosk**

Independent Director

- BS Industrial & Labor Relations – Cornell; JD – New York Law School
- Experience – President, CEO & Director of Cambrex Corporation (leading provider of active pharmaceutical ingredients) since 2008 driving significant revenue growth during his tenure

## **Steven Myers**

Independent Lead Director

- BS Mathematics – Stanford University
- Experience – Founder/Chairman/CEO SM&A (competition management services); career in aerospace and defense sectors supporting DoD & NASA programs

## **Andrew Pecora, MD, FACP**

Director

- MD — University of Medicine and Dentistry of New Jersey
- Experience – Chief Innovations Officer, Professor and Vice President of Cancer Services at John Theurer Cancer Center at Hackensack University Medical Center, and Managing Partner of the Northern New Jersey Cancer Center

## **Eric Wei**

Director

- BS – Mathematics & Economics – Amherst College; MBA – The Wharton School
- Experience – Founder/Managing Partner of RimAsia Capital partners (private equity); Formerly with Peregrine Capital, Prudential Securities, Lazard Freres, Citibank, Gilbert Global Equity Partners, and Crimson Asia Capital Partners



# CONTRACT MANUFACTURING IS A SIGNIFICANT OPPORTUNITY



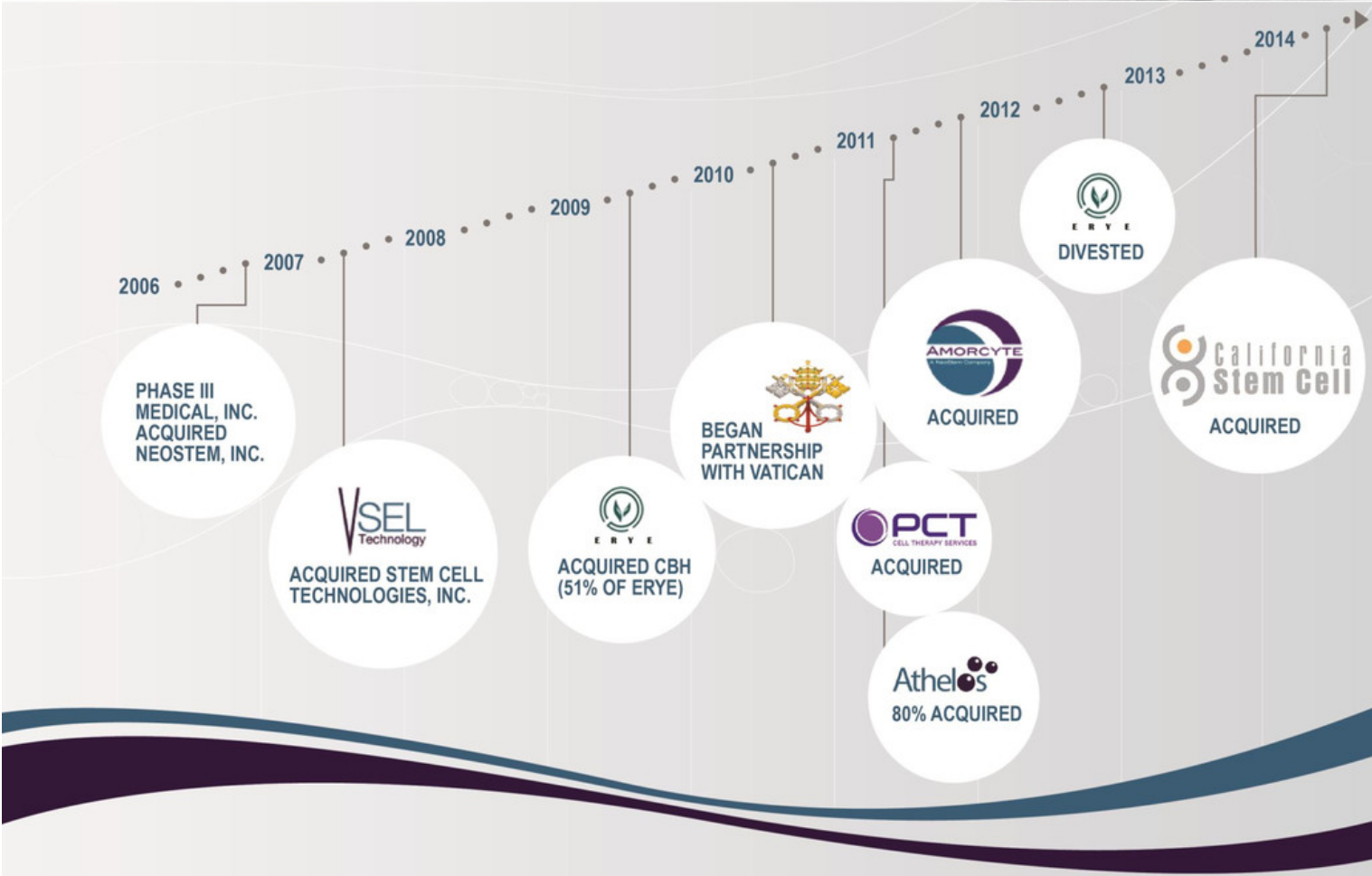
## EXAMPLES OF CONTRACT SERVICES POTENTIAL FROM CONCEPTION TO COMMERCIALIZATION\*

	LOW COMPLEXITY PRODUCT	MEDIUM COMPLEXITY PRODUCT	HIGH COMPLEXITY PRODUCT
<b>PRECLINICAL DRUG DISCOVERY CONTRACT</b>	12 to 18 Month Engagement <b>\$50,000 to \$250,000</b>	12 to 24 Month Engagement <b>\$250,000 to \$500,000</b>	24 to 36 Month Engagement <b>\$500,000 to \$1,000,000</b>
<b>PHASE 1 CLINICAL TRIAL MANUFACTURING CONTRACT</b>	6 to 12 Month Eng. 5 to 25 Units Produced <b>\$250,000 to \$750,000</b>	12 to 18 Month Eng. 25 to 50 Units Produced <b>\$625,000 to \$1,250,000</b>	12 to 24 Month Eng. 50 to 100 Units Produced <b>\$1,000,000 to \$2,000,000</b>
<b>PHASE 2 CLINICAL TRIAL MANUFACTURING CONTRACT</b>	12 to 18 Month Eng. 25 to 50 Units Produced <b>\$625,000 to \$1,250,000</b>	12 to 24 Month Eng. 100 to 200 Units Produced <b>\$2,000,000 to \$4,000,000</b>	18 to 36 Month Eng. 200 to 400 Units Produced <b>\$3,000,000 to \$6,000,000</b>
<b>PHASE 3 CLINICAL TRIAL MANUFACTURING CONTRACT</b>	12 to 18 Month Eng. 50 to 100 Units Produced <b>\$1,000,000 to \$2,000,000</b>	24 to 48 Month Eng. 200 to 400 Units Produced <b>\$3,000,000 to \$6,000,000</b>	24 to 48 Month Eng. 400 to 1,000 Units Produced <b>\$4,000,000 to \$10,000,000</b>
<b>COMMERCIAL MANUFACTURING CONTRACT</b>	Est. Peak Annual Sales 2,500 to 5,000 Units <b>\$38M to \$75M / Yr.</b>	Est. Peak Annual Sales 10,000 to 25,000 Units <b>\$80M to \$200M / Yr.</b>	Est. Peak Annual Sales 25,000 to 50,000 Units <b>\$125 to \$250M / Yr.</b>

\*Based on industry experience and estimated potential future commercial manufacturing in the industry



**SINCE 2006, ACCESSED OVER \$193M  
AND COMPLETED MULTIPLE M&A  
TRANSACTIONS AND ONE DIVESTITURE**



# CARDIOVASCULAR SCIENTIFIC ADVISORY BOARD



**Douglas W. Losordo, MD, FACC, FAHA**  
SAB Administrative Chairman

Chief Medical Officer, NeoStem

---

**Eugene Braunwald, MD, FRCP**

Brigham & Women's Hospital

**Bernard J. Gersh, MD, ChB, DPhil, FRCP**

The Mayo Clinic

**Dean J. Kereiakes, MD, FACC**

The Christ Hospital Heart of Greater Cincinnati

**Douglas L. Mann, MD, FACC**

Washington University School of Medicine

**Emerson C. Perin, MD, PhD, FACC**

Texas Heart Institute

**Bertram Pitt, MD**

University of Michigan School of Medicine

**Arshed Quyyumi, MD, FRCP, FACC,**

Emory University School of Medicine

**Edmund K. Waller, MD, PhD, FACP**

Emory University School of Medicine

**James T. Willerson, MD**

Texas Heart Institute

**Joseph Wu, MD, PhD**

Stanford University School of Medicine





# IMMUNE MODULATION PROGRAM ADVISORS



The Company accesses these experts to advise in the areas of diabetes, asthma, and other autoimmune conditions for its Immune Modulation Program.

---

Jeffrey Bluestone, PhD	University of California, San Francisco, Diabetes Center
William Busse, MD	University of Wisconsin
Mario Castro, MD, MPH	Washington University in St. Louis
David A. Horwitz, MD	University of Southern California
Robert Korngold, PhD	Hackensack University Medical Center
Robert J. Meyer, MD	Virginia Center for Translational and Regulatory Sciences
Robert S. Negrin, MD	Stanford University
Paul O'Byrne, MB	McMaster University
David Peritt, PhD	Hospira
Noel L. Warner, PhD	BD Biosciences
Prescott Woodruff, MD, MPH	University of California, San Francisco



# VSEL™ TECHNOLOGY ACADEMIC COLLABORATORS



**Mariusz Ratajczak, MD, PhD, Dsci**

University of Louisville

**Russell Taichman, DMD, DMSc**

University of Michigan

**Vincent Falanga, MD**

Boston University

**Michael Young, PhD**

Schepens Eye Research Institute, Harvard Medical School

**Kameran Lashkari, MD**

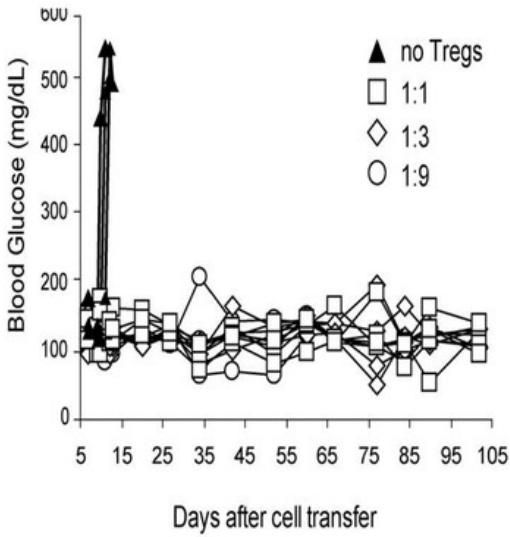
Schepens Eye Research Institute, Harvard Medical School

**Song Li, PhD**

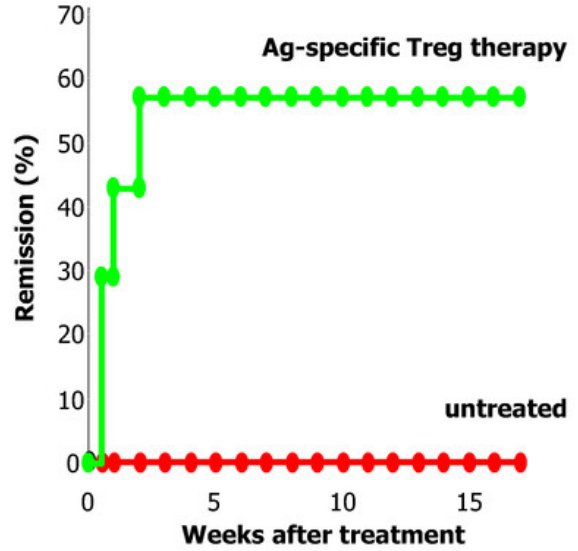
University of California, Berkeley



# TREG IMMUNOTHERAPY WORKS IN MODEL OF T1D



**Tregs effectively suppress diabetes**



**Ag-specific Tregs reverse diabetes**

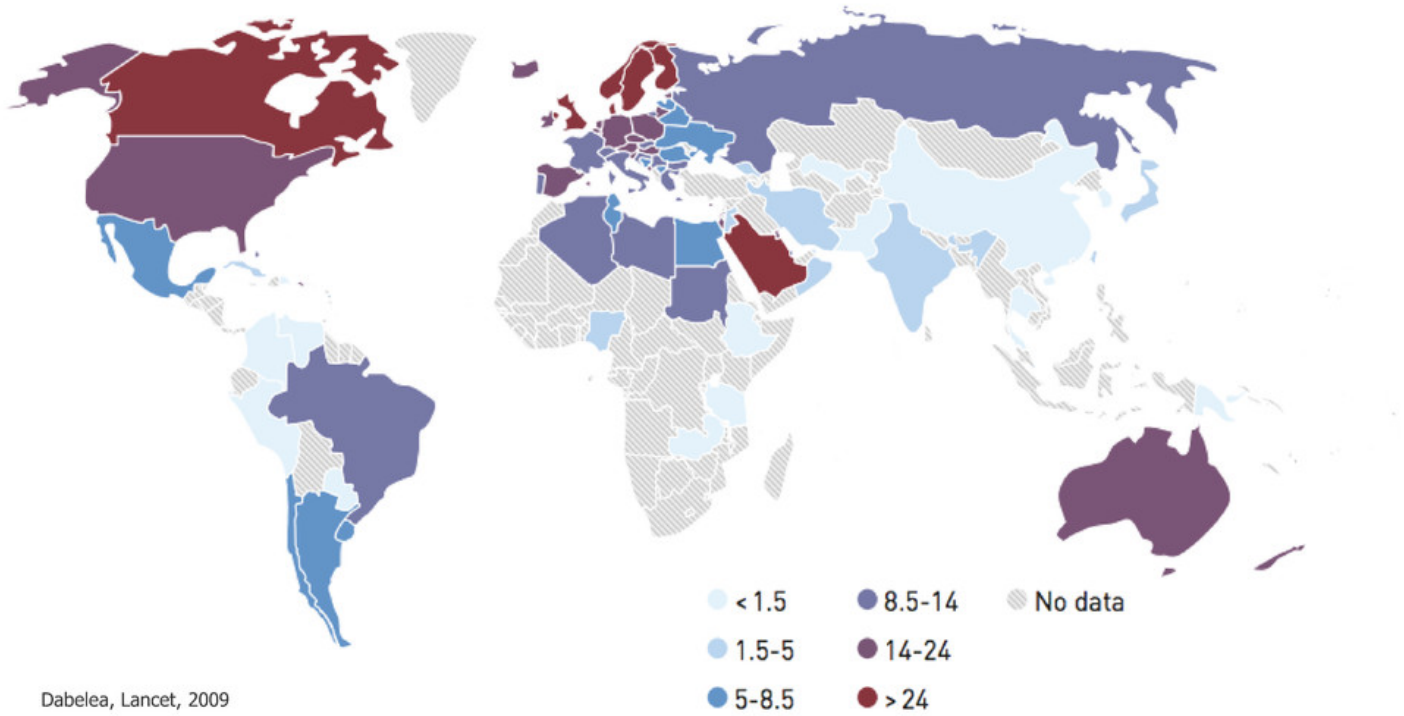
Tang, Bluestone, et al.



# T1D IS ON THE RISE



NEW CASES OF T1D (0-14 YEARS) PER 100,000 CHILDREN, 2013:  
CONCENTRATION IN DEVELOPED MARKETS



Dabelea, Lancet, 2009



# ECONOMIC IMPACT OF T1D



## THE ECONOMIC BURDEN OF T1D IN THE U.S. IS ESTIMATED AT \$14.9 BILLION<sup>1</sup>

- Average economic burden per person with diabetes is larger for T1D vs T2D

## PREVENTION IS KEY - MEDICAL COSTS ASSOCIATED WITH T1D INCREASE SUBSTANTIALLY WITH AGE AND DURATION OF DISEASE

- Annual medical costs per person increase with age at a much faster rate for those with T1D vs T2D
- For T1D the average medical cost per case increases from ~\$4,000 for people younger than age 44 to ~\$35,000 for the population age 65 and older
- Increased utilization of institutional care in elderly T1D patients

## \$2 BILLION ESTIMATED MARKET SIZE FOR INSULIN SALES IN 2017

- For the T1D indication alone

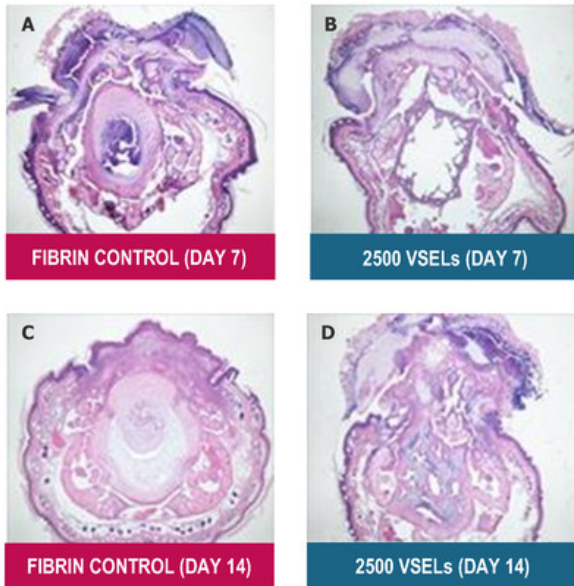
## UNMET NEED FOR $\beta$ -CELL PRESERVING/PREVENTATIVE TREATMENTS FOR T1D

1. Dall TM et al. *Population Health Management* 2009;12:103–110

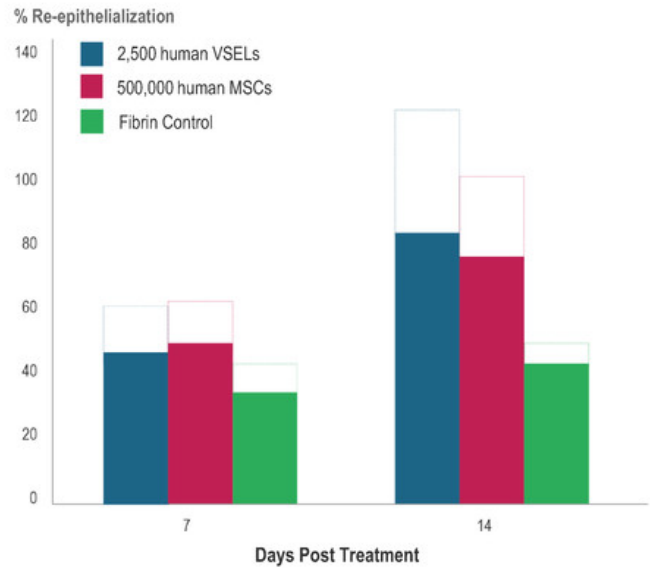
# HUMAN VSELS™ ACCELERATE HEALING IN A SCID MOUSE COMPLEX TAIL WOUND MODEL



PRELIMINARY DATA IN A PRECLINICAL MODEL OF SEVERE COMPLEX WOUNDS SUGGEST THAT VSELS™ MAY BE MORE EFFECTIVE IN ACCELERATING HEALING THAN MESENCHYMAL STROMAL CELLS (MSCs)



VSELS vs. MSCs  
P<0.05



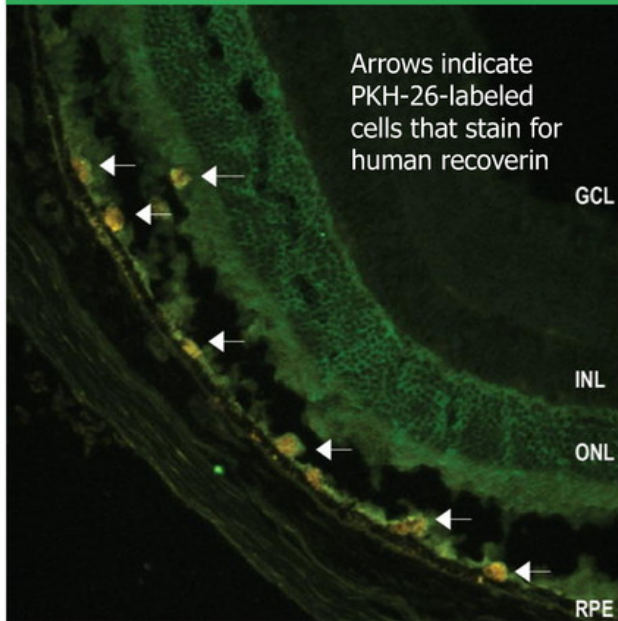
# VSELS™ COULD BE USED TO TREAT MACULAR DEGENERATION



PRELIMINARY DATA SUGGEST HUMAN VSELS™ INJECTED INTO A MOUSE SUB-RETINAL SPACE INTEGRATE AND SHOW DIFFERENTIATION POTENTIAL IN SITU

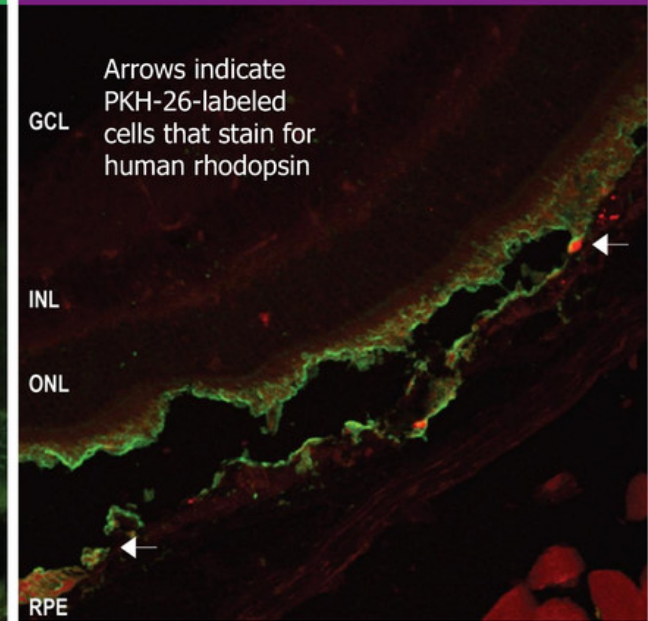
## PKH-26 / RECOVERIN

PKH-26 positive cells co-labeled with Recoverin (400x).



## PKH-26 / RHODOPSIN

PKH-26 positive cells co-labeled with Rhodopsin (400x).



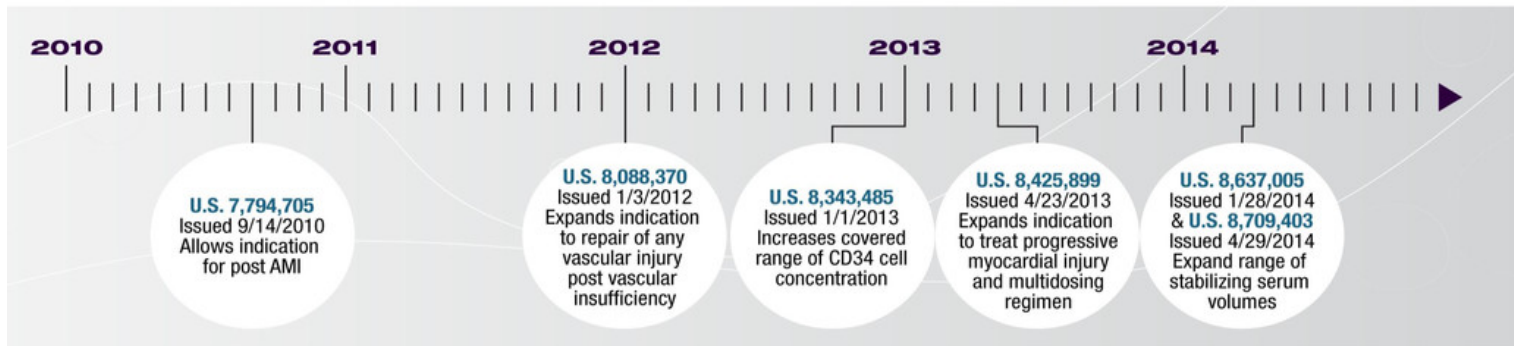
Eminli, S. et al. Exploring the use of human very small embryonic-like stem cells (VSELS) isolated from adult peripheral blood for therapy of dry age-related macular degeneration (AMD). ISSCR 2012 Annual Meeting, Yokohama, Japan. Poster presentation.



# ISCHEMIC REPAIR PROGRAM INTELLECTUAL PROPERTY



- Broad and growing patent portfolio supports cardiac and other ischemic conditions
- NeoStem’s patent claims cover a pharmaceutical composition that contains a therapeutic concentration of non-expanded CD34/CXCR4 stem cells that move in response to SDF-1 or VEGF, together with a stabilizing amount of serum, and that can be delivered parenterally through a catheter to repair an injury caused by vascular insufficiency
- Six granted U.S. composition of matter and methods patents



- 10 granted or allowed OUS composition of matter and method patents:
  - ▶ European Union, Japan, South Africa, Malaysia, Philippines, Canada, Russia
- Patent Applications: 20 U.S. and OUS patents pending
- Issued and pending claims can be applied to broad range of other conditions caused by underlying ischemia, including: chronic myocardial ischemia post-AMI; chronic heart failure; critical limb ischemia; and ischemic brain injury

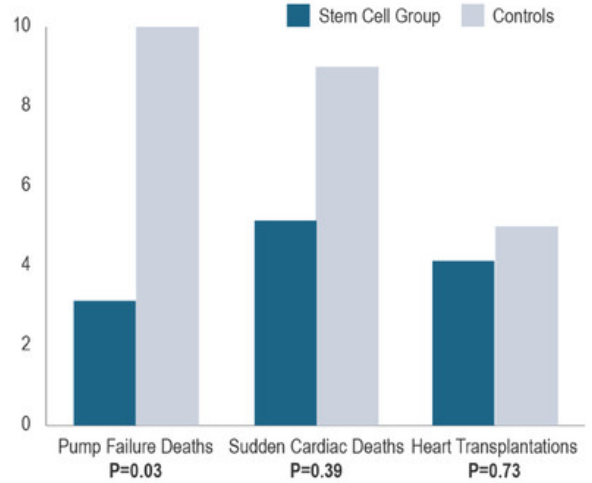
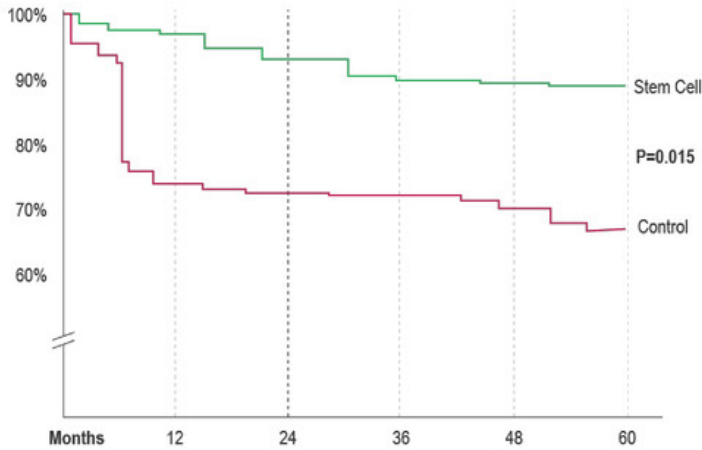




# RECENT DATA SUPPORTS CD34 STEM CELL THERAPY IN CHRONIC HEART FAILURE



## CD34 STEM CELL THERAPY SIGNIFICANTLY IMPROVES EVENT-FREE SURVIVAL AT 5 YEARS IN PATIENTS WITH DILATED CARDIOMYOPATHY



- Significant need - prevalence of over 23 million worldwide, 5.7 million U.S.
- Therapy would enable larger distribution (not limited to mapping systems)

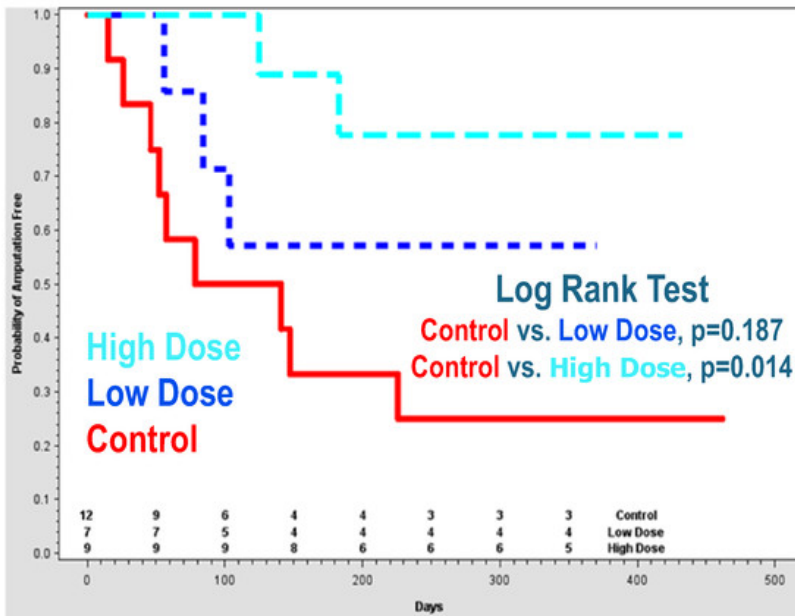
Adapted from Vrtovec et al, *Circ Res* published online 10/12/2012  
Note: 110 patients (open label, 55 treated with cells and 55 standard of care)



# RECENT DATA SUPPORTS CD34 STEM CELL THERAPY IN CRITICAL LIMB ISCHEMIA



## PROBABILITY OF AMPUTATION-FREE SURVIVAL 12 MONTHS



- Double blind, randomized, controlled trial of autologous CD34 cells
- Two dose levels (N=28); Diabetics distributed equally
- CLI Patients (Rutherford Score IV or V); Non-optimal candidate for surgical or percutaneous revascularization or have refused revascularization
- 8 intramuscular injections or placebo Rx

Losordo et al. (2012) A Randomized, Controlled Pilot Study of Autologous CD34+ Cell Therapy for Critical Limb Ischemia, *Circulation Cardiovascular Interventions*.



# MARKET OPPORTUNITY IN ASTHMA



## ASTHMA

---

- Affects 25 million in U.S. and 300 million worldwide
- Asthma accounts for \$56 billion in annual direct and indirect health care costs in U.S.
- Steroid resistant asthma afflicts less than 5% of the total asthma population, but accounts for up to 50% of healthcare spending on asthma
- Plan to initiate proof-of-concept study subject to review and approval of the protocol by the appropriate regulatory authorities

