## 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 12, 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:

- o 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)
- o Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- o 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.

NeoStem, Inc. 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 and is attached hereto as Exhibit 99.1. NeoStem undertakes no obligation to update, supplement or amend the materials attached hereto as Exhibit 99.1.

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 Exhibit 99.1, 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 Exhibit 99.1 hereto, contains "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 Slide presentation of NeoStem, Inc. dated November 2014\*

\*Exhibit 99.1 is 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 12, 2014



#### 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 appear in this presentation. Factors that could cause our actual results of 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 Caner 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, including the results of our planned Intus Phase Phase 3 clinical trial of DC/TC being developed to treat metastatic melanoma, our PreSERVE Phase 2 clinical trial of NBS10 (AMR-001) being developed to treat acute myocardial infarction and planned clinical trials;
- 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 <a href="https://www.sec.gov">www.sec.gov</a> 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 revenuegenerating 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



### **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



Using DC/TC Technology



Using CD34 Cell Technology



Using T Regulatory Cell Technology



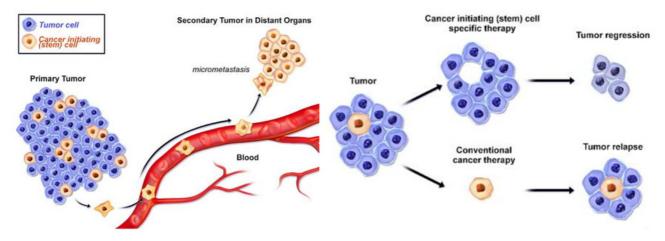
 Using VSEL<sup>™</sup> Technology and Stem Cell Derived Growth Factors



# 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



\* These cells are defined as invasive migratory cancer initiating cells capable of reconstituting and developing new tumors

#### FIRST TARGET INDICATION: MELANOMA

#### **BASICS OF MELANOMA**

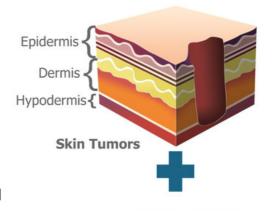
- Most lethal form of skin cancer
- Most often caused by unrepaired DNA damage to skin cells from UV radiation
- 76,100 estimated new cases per year in U.S.<sup>1</sup>
- Kills an estimated 9,710 in U.S. annually<sup>1</sup>

#### SURVIVAL RATE

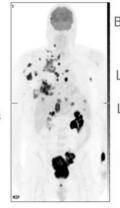
 Stage IV metastatic melanoma – 15% five-year survival rate with current therapies<sup>2</sup>

# 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







Brain

Lung

Liver

\_\_\_\_\_

Bone



### **MELANOMA: STANDARD OF CARE**

SUBOPTIMAL EFFICACY, POOR TOLERABILITY, HIGH COST



THERAPY	2 YR OVERALL SURVIVAL	SIDE EFFECTS	ESTIMATED COST
Proleukin (Interleukin-2) Prometheus Labs	25%1	Capillary Leak Syndrome Impaired Neutrophil Function Disseminated Infection Sepsis	>\$100,000
Yervoy (Ipilimumab) (CTLA-4 inhibitor) Bristol Myers – Squibb	28%²	Enterocolitis Hepatitis Dermatitis Neuropathy Endocrinopathy GI Disorders	>\$100,000
Oral BRAF inhibitors & MEK inhibitors	28%³	Cutaneous Malignancies Hypersensitivity Reactions Tumor Promotion in BRAF wild-type QT Prolongation Hepatotoxicity	>\$100,000
Chemotherapy	15% <sup>4</sup> 2002, Atkins <i>JCO</i> 2008	Anemia Fatigue Risk of Infection Nausea/Diarrhea/Constipation	~\$50,000

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



4. Chapman JCO 1999, Middleton JCO

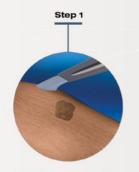
Nesstem\*

4. Chapman JCO 1999, Middleton JCO
(Derived from a range of 9 – 20%) 4. Chapman JCO 1999, Middleton JCO 2000, Ranson JCO 2007, Robert NEJM 2011, Chapman NEJM 2011

# TARGETED CANCER IMMUNOTHERAPY TREATMENT PROCESS



Step 6



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



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: (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



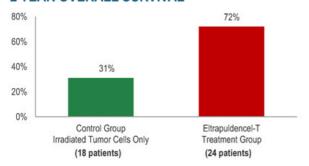
STEP 5: (WEEK 6 - WEEK 8) Partially matured, antigen-loaded dendritic cells are cryopreserved, quality controlled, then shipped to the clinical site



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

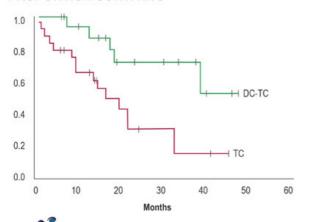
### PHASE 2 RESULTS FOR ELTRAPULDENCEL-T FOR METASTATIC MELANOMA

#### 2 YEAR OVERALL SURVIVAL



#### PROPORTION SURVIVING

NeoStem<sup>®</sup>



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

NeoStem.

Intus study

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

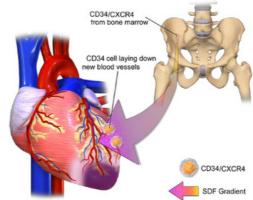
FDA DESIGNATIONS Fast Track Designation for metastatic melanoma and Orphan Drug

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

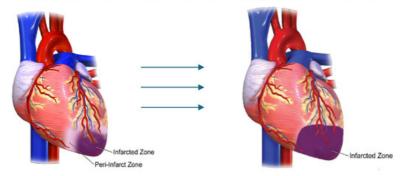




# FIRST TARGET INDICATION: STEMI

- 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

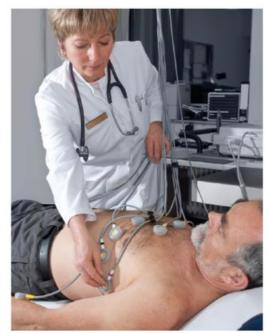
#### INVASIVE, ASSOCIATED MORBIDITY & MORTALITY



#### Emergency care:

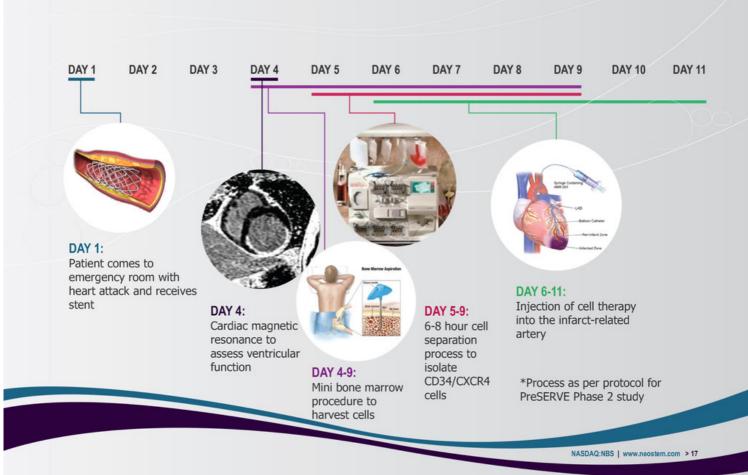
- ► Administration of antithrombotic therapy, aspirin, beta-blocker, nitroglycerin, and/or morphine
- Percutaneous coronary intervention coronary angioplasty and stenting
- Home care:
  - ► Aspirin, anti-clotting medication, beta-locker
  - ► Cholesterol-lowering therapy and lifestyle changes
- Prognosis:
  - ▶ Despite improvements in care, prognosis for STEMI unchanged over past 10 years according to AHA¹
  - ▶ One year mortality of 10%²
  - ▶ 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
  - 3. Duke Clinical Research Institute





### **NBS10 TREATMENT PROCESS\***





# PHASE 1 RESULTS POINT TO NBS10 POTENTIAL



# DOSE RESPONSE CORRELATED WITH MOBILE CD34 CELLS

Patients dosed ≥ the threshold dose of 10 million cells showed significant improvement in perfusion

#### RTSS (HYPOPERFUSION)

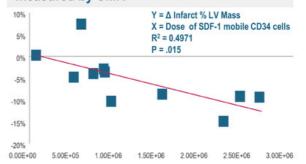
COHORT	BASE LINE	6 MONTHS	DELTA	% CHANGE
Control	259.0	273.5	+14.5	+5.6
5M Cells	714.2	722.0	+7.8	+1.1
10M Cells	998.6	635.8	-362.8	-36.4
15M Cells	584.0	462.0	-122.0	-20.9

No action/changes from DSMB after interim reviews

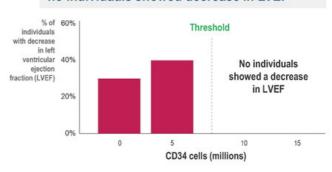
Quyyumi AmHtJ 2011 and data on file



# Increasing doses of CD34/SDF-1 mobile cells reduced the size of the infarct region as measured by CMR



## At threshold dose of 10 million cells or more, no individuals showed decrease in LVEF

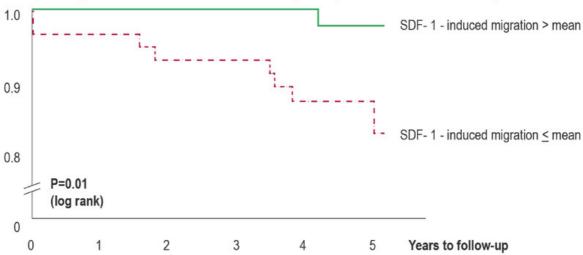


# MIGRATORY CAPACITY OF ADMINISTERED CD34 CELLS ASSOCIATED WITH EVENT-FREE SURVIVAL POST AMI



 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)

Event-free survival (%) (cardiac, cardiovascular and unknown death, rehospitalization for heart failure)



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



## **PRESERVE PHASE 2 STUDY: ENROLLMENT COMPLETED WITH ANTICIPATED DATA RELEASE NOV. 17,2014**

**TARGET** Post-AMI patients

KEY INCLUSION CRITERIA Confirmation of ST Elevation MI (STEMI); ejection fraction

< 48% at day 4; state of the art care post stenting

LOCATION AND NUMBER

**OF SUBJECTS** 

United States, 60 centers, 160 patients (enrollment

completed)

**DESIGN** 

Double blind, placebo controlled, randomized (1:1)

PRIMARY ENDPOINTS

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)

OTHER ENDPOINTS

To determine preservation of cardiac function and clinical outcomes:

 CMR to measure LVEF, LVESV, LVEDV, regional myocardial strain, infarct/peri-infarct regional wall motion abnormalities, and infarct size (baseline and 6 months)

Quality of Life measures: (KCCQ & SAQ)

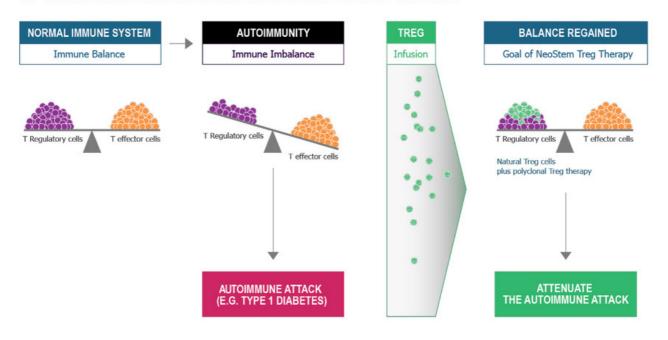
TREATMENT

0 -NeoStem<sup>®</sup> Single dose via infarct related artery with minimum dose for release >10MM CD34+ cells

# 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>



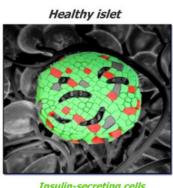
1. Chai, Jian-Guo et al, Journal of Immunology 2008; 180;858-869



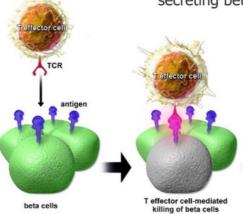
## FIRST TARGET INDICATION: DIABETES MELLITUS TYPE-1 (T1D)



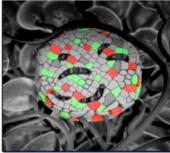
- Also called insulin dependent diabetes or juvenile diabetes
- Affects >34 million worldwide, 1 in 300 children and more adults
- Economic burden of T1D in the U.S. is estimated at \$14.9 billion
- Autoimmune destruction of insulinproducing (beta cells) of the pancreas
- Diabetes is leading cause of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



Insulin-secreting cells Glucagon-secreting cells



Islet at diagnosis of T1D



Insulin-secreting cells Glucagon-secreting cells



### **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 alone1
- 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

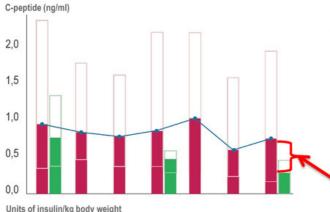
DAY 5-7: Blood draw from patient

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\*





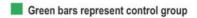
■ First human evidence of therapeutic effect of autologous Treg therapy protection of pancreatic function in new onset T1D in children

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

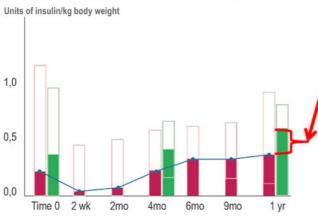
▶ C-peptide levels stabilized

▶ Reduction of insulin requirements

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



\* 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



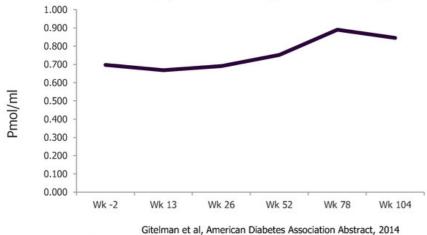


# ADMINISTRATION OF REGULATORY T CELLS\* APPEARS TO BE SAFE IN ADULTS WITH ESTABLISHED T1D



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



# 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

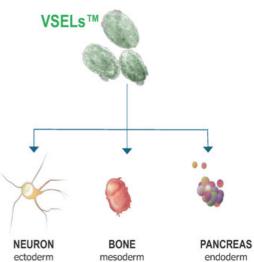


#### **TISSUE REGENERATION PROGRAMS**



# VSEL™ TECHNOLOGY: POTENTIAL TO REPAIR DAMAGED TISSUE

- Evaluating therapeutic potential of very small embryoniclike stem cells (VSELs<sup>™</sup>)
- 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<sup>™</sup> 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<sup>™</sup>) 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 ft²)
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**



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

#### **FINANCIAL METRICS**

REVENUE <sup>3</sup>	\$4.1M (Third Quarter)
CASH <sup>4</sup>	\$32.8M
COMMON SHARES OUTSTANDING <sup>1</sup>	35.4M

WARRANTS<sup>1</sup> 3.6M

(avg. warrant exercise price of \$14.13)

OPTIONS<sup>1</sup> 4.5M

(avg. option exercise price of \$9.24)

<sup>4.</sup> As of September 30, 2014 (includes marketable securities)



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

<sup>2.</sup> As of October 15, 2014

<sup>3.</sup> For the three months ended September 30, 2014

### **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

#### ROBIN SMITH, MD, MBA

CHAIRMAN & CEO

PHONE: (212) 584-4174

EMAIL: RSMITH@NEOSTEM.COM





# **BOARD OF DIRECTORS**



Robin Smith, MD, MBA Chairman of the Board	<ul> <li>MD – Yale; MBA – The Wharton School</li> <li>Formerly President &amp; CEO IP2M, EVP &amp; CMO HealthHelp</li> </ul>			
chamilar of the Board	<ul> <li>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</li> </ul>			
Richard Berman	■ BS and MBA - NYU; JD - Boston College			
Independent Director	<ul> <li>Over 35 years of venture capital, management, M&amp;A experience</li> </ul>			
	<ul> <li>Experience – Current Board of Directors of Apricus Biosciences, Easylink Services International, Inc., Advaxis, Inc., Broadcaster, Inc., National Investment Managers</li> </ul>			
Drew Bernstein, CPA	BS – University of Maryland Business School			
Independent Director	<ul> <li>Licensed in State of New York; member AICPA, NYSSCPA and NSA</li> </ul>			
	<ul> <li>Experience – Bernstein &amp; Pinchuk LLP (member of BDO Seidman Alliance); PRC auditing; 200+ real estate transactions with \$3B+ aggregate value; accountant and business advisor</li> </ul>			
Martyn Greenacre, MBA Independent Director	BA – Harvard College; MBA – Harvard Business School			
	<ul> <li>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</li> </ul>			
Steven M. Klosk	■ BS Industrial & Labor Relations – Cornell; JD – New York Law School			
Independent Director	<ul> <li>Experience – President, CEO &amp; Director of Cambrex Corporation (leading provider of active pharmaceutical ingredients) since 2008 driving significant revenue growth during his tenure</li> </ul>			
Steven Myers	BS Mathematics – Stanford University			
Independent Lead Director	<ul> <li>Experience – Founder/Chairman/CEO SM&amp;A (competition management services); career in aerospace and defense sectors supporting DoD &amp; NASA programs</li> </ul>			
Andrew Pecora, MD, FACP	■ MD — University of Medicine and Dentistry of New Jersey			
Director	<ul> <li>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</li> </ul>			
Eric Wei	■ BS – Mathematics & Economics – Amherst College; MBA – The Wharton School			
Director	<ul> <li>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</li> </ul>			
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# CONTRACT MANUFACTURING IS A SIGNIFICANT OPPORTUNITY



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

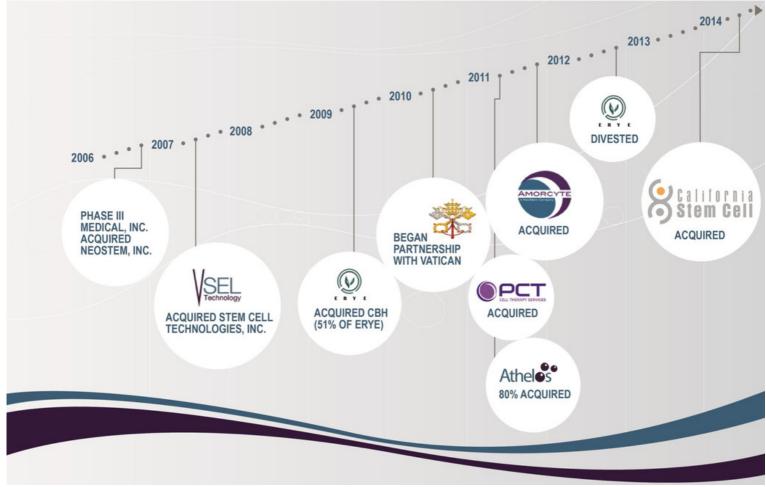
	LOW COMPLEXITY PRODUCT	MEDIUM COMPLEXITY PRODUCT	HIGH COMPLEXITY PRODUCT
PRECLINICAL DRUG DISCOVERY CONTRACT	12 to 18 Month Engagement	12 to 24 Month Engagement	24 to 36 Month Engagement
	\$50,000 to \$250,000	\$250,000 to \$500,000	\$500,000 to \$1,000,000
PHASE 1 CLINICAL TRIAL MANUFACTURING CONTRACT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

<sup>\*</sup>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

Ne Stem

## 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

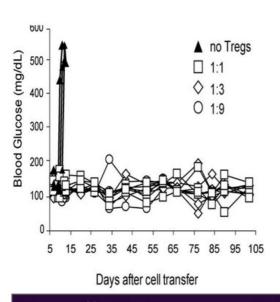
Kameran Lashkari, MD Schepens Eye Research Institute, Harvard Medical School

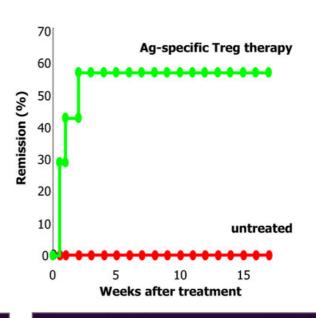
Song Li, PhD University of California, Berkeley



# TREG IMMUNOTHERAPY WORKS IN MODEL OF T1D







Tregs effectively suppress diabetes

**Ag-specific Tregs reverse diabetes** 

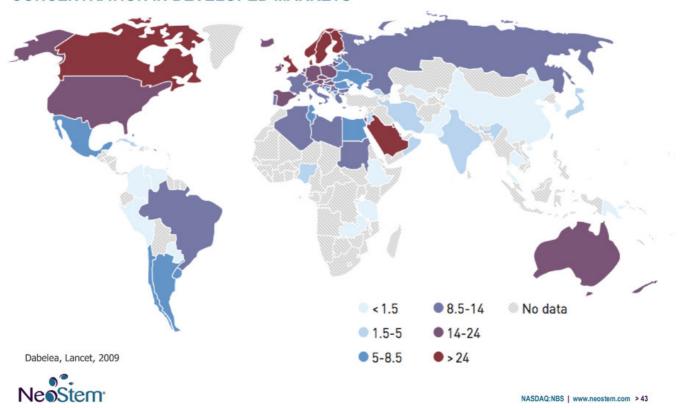
Tang, Bluestone, et al.



### T1D IS ON THE RISE



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



#### **ECONOMIC IMPACT OF T1D**



#### THE ECONOMIC BURDEN OF T1D IN THE U.S. IS ESTIMATED AT \$14.9 BILLION1

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 β-CELL PRESERVING/PREVENTATIVE TREATMENTS FOR T1D

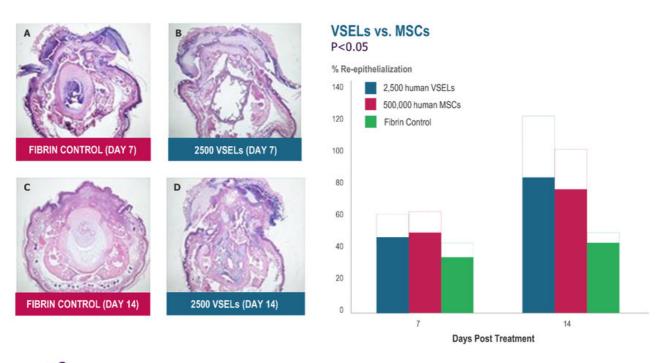
1. Dall TM et al. Population Health Management 2009;12:103-110



## 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)



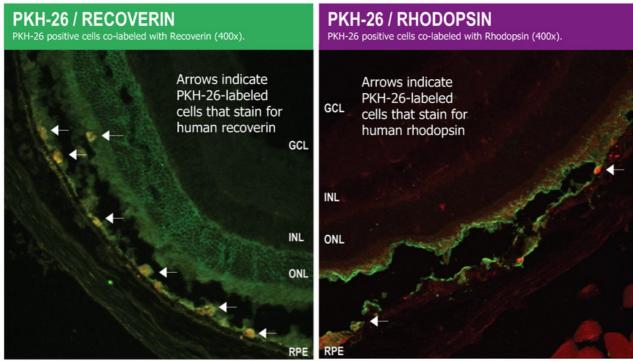


# VSELS™ COULD BE USED TO TREAT MACULAR DEGENERATION

NeoStem<sup>®</sup>



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

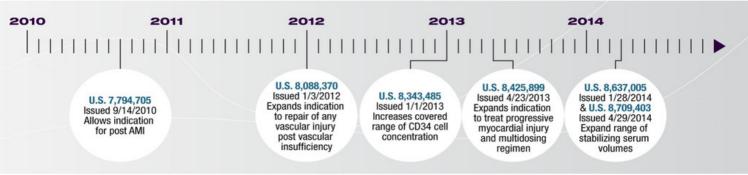


Eminli, S. et al. Exploring the use of human very small embryonic-like stem cells (VSELs) isolated from adult peripheral blood for therapy of dry age-related macular degeneration (AMD). ISSCR 2012 Annual Meeting, Yokohama, Japan. Poster presentation.

# 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



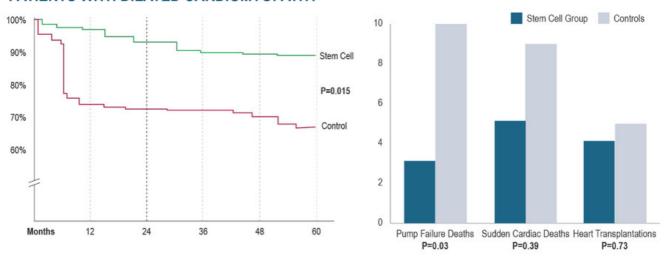
- 10 granted or allowed OUS composition of matter and method patents:
  - ▶ European Union, Japan, South Africa, Malaysia, Philippines, Canada, Russia
- Patent Applications: 20 U.S. and OUS patents pending
- Issued and pending claims can be applied to broad range of other conditions caused by underlying 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 SURVIVIAL 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)

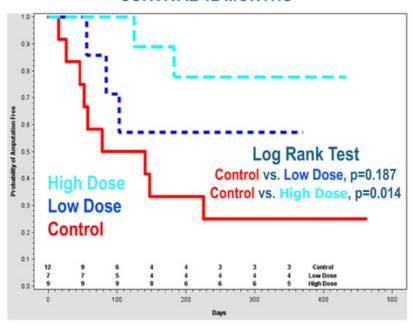
Adapted from Vrtovec et al, *Circ Res* published online 10/12/2012 Note: 110 patients (open label, 55 treated with cells and 55 standard of care)



## 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

