

7-May-2012

CARDIUM
MEDICAL OPPORTUNITIES PORTFOLIO

Health Sciences & Regenerative Medicine

Investor Presentation

May 2012



The Power of Biology™

Forward Looking Statements

This presentation may contain forward-looking statements, including comments concerning clinical trials and product development programs, evaluation of potential opportunities, the level of corporate expenditures, the assessment of Cardium's technology by potential corporate partners, capital market conditions, timing of events, cash consumption and other subjects. Actual results could differ materially from these forward-looking statements for many reasons, including the risks described under "Risk Factors" in the Company's Annual Report on Form 10-K and Quarterly Reports on Form 10-Q as filed with the Securities and Exchange Commission. No guarantee about future results, performance or achievements can be made. Neither Cardium nor its agents intend to update any of the forward-looking statements after the date of this presentation to conform them to actual results or to changes in expectations.



Health
Sciences


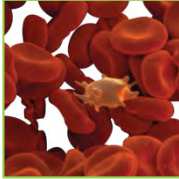




Social Media: Internationalization of Medical Market Opportunities

Regenerative
Medicine

Metrics	U.S. Market	International Markets	Total
Population	300 Million 5%	6.3 Billion 95%	6.6 Billion 100%
Facebook Users	225 Million 25%	675 Million 75%	900 Million 100%



Portfolio Status

Focus	Technology Platforms	Summary
	<p>Formulated Collagen and DNA-Activated Matrices for Wound & Orthopedic Repair</p>	 <p>Excellagen® Wound Care FDA 510(k) Clearance Initial Product Introduction Underway</p>
	<p>Portfolio of Cardiovascular Growth Factor Biologics Acquired from Schering AG</p>	 <p>Generx® [Ad5FGF-4] “ASPIRE” Phase 3 Registration Study for International Markets</p>
	<p>Nutraceuticals Addressing the Unique Needs of Today’s Highly Mobile and Technology-Driven Millennial Consumers</p>	 <p>Nutra-Apps® Product Line</p>

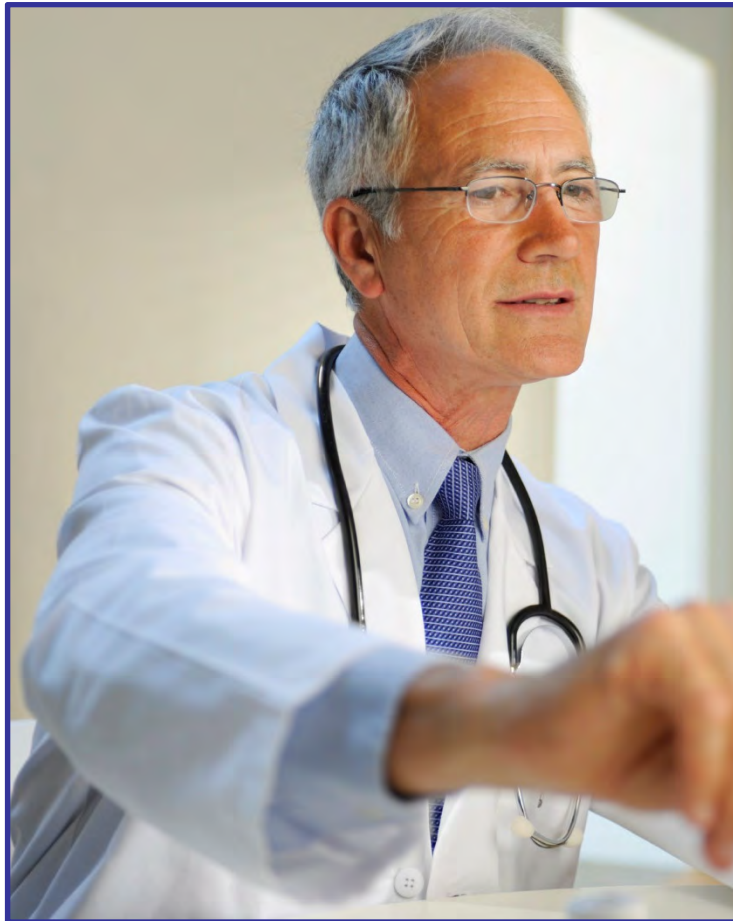


Investment Highlights

- Capital-efficient, asset-based, business strategy focused on finding “diamonds in the rough” and leveraging research and development investments by big pharma, venture and institutional investors | Strategy intended to provide a diversified and more balanced portfolio of risk/return opportunities
- Excellagen® Wound Care Management Platform: Initial product has now received FDA 510(k) clearance for U.S. marketing and sales | Initial focus on diabetic foot ulcers | Other product line extensions currently under consideration | Consistent with business strategy, support initial market introduction, seed the market, then monetize through strategic partnerships and distribution deals in U.S. and international markets | Initiated product introduction in March 2012 | Logistics Partner: Smith Medical Partners | First international distribution deal: BL&H (Korea)
- Generx® Global Cardiovascular Platform: International cost-efficient “ASPIRE” Phase 3 / Registration Study now underway | Study Design: 100 patients with SPECT imaging efficacy endpoint | Initial medical focus: Patients in Russia with advanced coronary artery disease who have limited access to costly and rationalized bypass surgery and angioplasty / stent procedures (Russian CVD death rates 4X greater than U.S.; average life expectancy for males – 64 years) | Initiated clinical study in March 2012 | Russian clinical development partner: bioRasi / Vendevia Group
- MedPodium® In-House Brand Platform: Portfolio of premium, science-based, easy-to-use one and done nutraceuticals designed to promote personal health and well being for today's active, informed and professional lifestyles | Seeking revenue-based strategic acquisitions in the nutraceutical space | Initial retail launch of Nutra-Apps® products via web-based venues and selected geographic areas now underway
- Acquisition Search: Challenging economic environment continues to generate a steady stream of deal flow | CXM remains highly selective focused primarily on late-stage clinical development opportunities and revenue-based businesses and financial services to leverage Cardium’s skill set in the fields of biostatistics, finance, science and medicine
- Key Investor Metrics: No outstanding debt, substantial trading liquidity, continuing news flow expected from three product platforms and other opportunities under consideration | Current capital structure provides for significant economic upside potential as CXM executes its asset-based business strategy | Capital-efficient ATM Shelf Registration in place



Diabetic Foot Ulcers: Continuing Unmet Medical Need

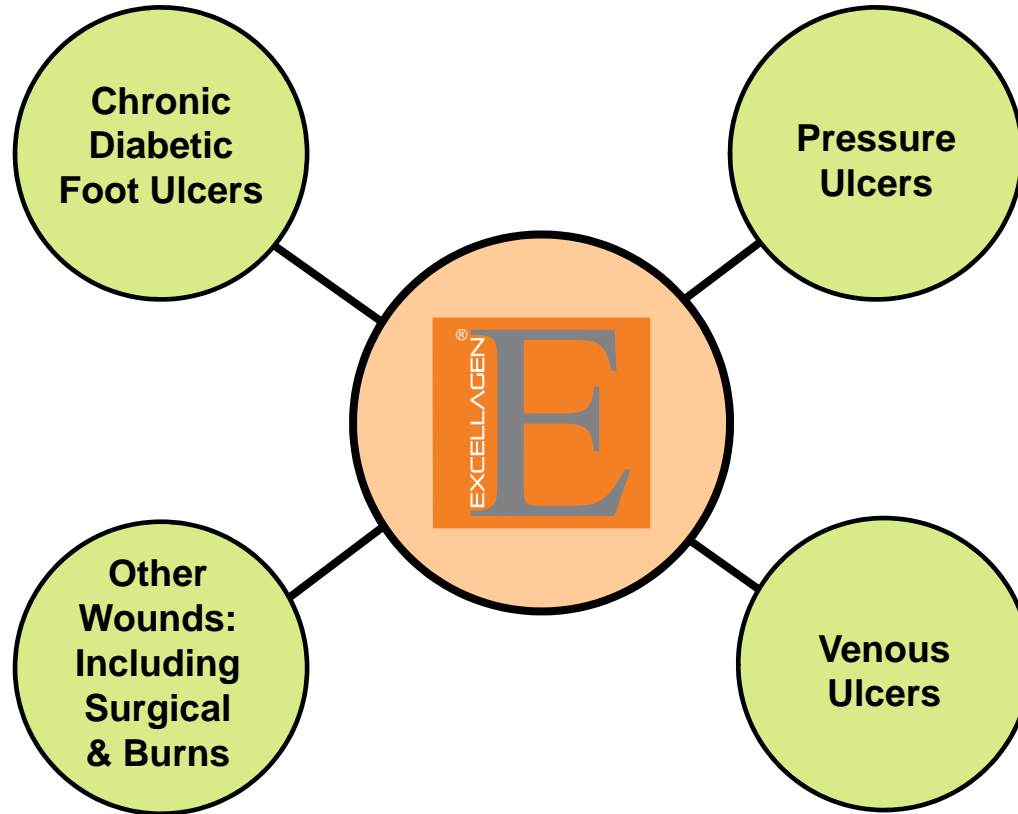


Looking for a New Wound Care Pathway...

Cardium's independent survey reports that 87% of physicians indicate a need for additional treatments for diabetic foot ulcers, and seek advanced care products that are user friendly, require less manipulation and less frequent administration than current products.



Excellagen[®]: Medical Opportunity





Excellagen®: Wound Care Management Platform

engineered for debridement procedures

- Refined custom formulated fibrillar Type I bovine collagen
- High molecular weight
- Biocompatible, physiologic pH
- Pre-filled, ready to use syringes
- Simple and easy: no thawing or mixing
- Flowable: no staples or sutures
- Viscosity optimized for complete, dripless wound coverage
- 1 syringe can cover wounds up to 5cm²
- Treatment only at 1 to 2 week intervals
- Interplays with blood cells and platelets, which are involved with the release of endogenous growth factors



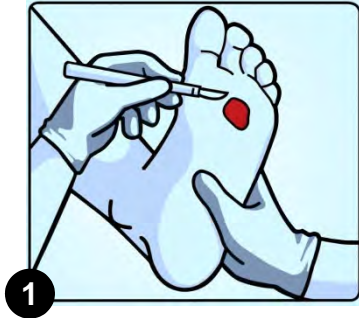
- Refrigerated storage required:
Cold Chain logistics partner: Smith Medical
- For Professional Use Only
- Each kit contains four single-use syringes containing 0.5cc of Excellagen topical gel and four sterile flexible applicators
- List price: \$380 per kit (\$95 per syringe)



THE POWER OF BIOLOGY™



Excellagen® Treatment: Diabetic Foot Ulcers



1 Debride



2 Treat



3 Bandage



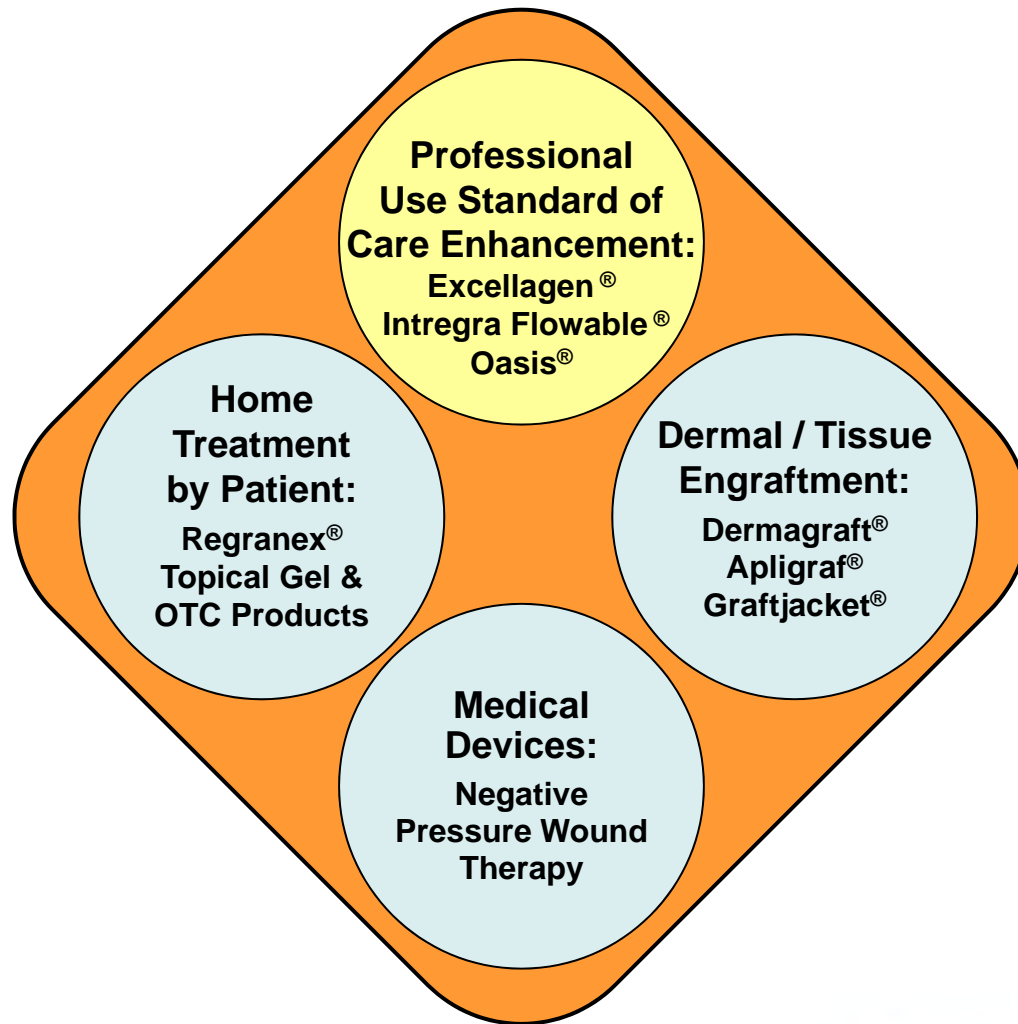
4 Offload




www.excellagen.com



Excellagen[®]: Competitive Landscape






EXCELLAGEN™

A New Wound Care Pathway
Diabetic Foot Ulcers

You Tube™
www.excellagen.com



Excellagen[®]: Potential for Diabetic Foot Ulcer Market

Diabetic Foot Ulcers	Annual
U.S. Patients with Diabetic Foot Ulcers ¹	1.3 Million
Average Number of Physician Visits per Year ²	14 per patient
Projected Patient Visits Involving Surgical Debridement (est. 50%)	7 per patient
Potential Number of U.S. Surgical Debridement Procedures for DFUs	9.1 Million
Potential Revenue Opportunity at Varying Excellagen Market Penetration Levels ³	
	
0.5%	\$5 Million
1.0%	\$10 Million
2.0%	\$20 Million
4.0%	\$35 Million
6.0%	\$50 Million
8.0%	\$70 Million
10.0%	\$80 Million

¹ American Diabetes Association.

² U.S. Department of Health and Human Services: Agency for Healthcare Research and Quality.

³ Assumes \$95.00 per Excellagen Treatment.



Excellagen®: Conceptual Product Predicate



"Excellagen: The Power of Biology™"



"Discover Lovanza: Where Nature Meets Science"

Highly-Refined Type I
Bovine Fibrillar Collagen

Highly-Refined
Omega 3 Fish Oil

Professional Use
Product

Prescription-Based
Product

Specialized
Manufacturing Process

Specialized
Manufacturing Process

Premium Priced

Premium Priced

FDA 510(k) Clearance
(Supported by Multi-Center
Matrix Clinical Study)

FDA Approved Product with
Drug-like Claims (Based on
Multi-Center Clinical Studies)

Competition:
Low-Priced, Commodity-
Based Products

Competition:
Low-Priced, Commodity-
Based Products

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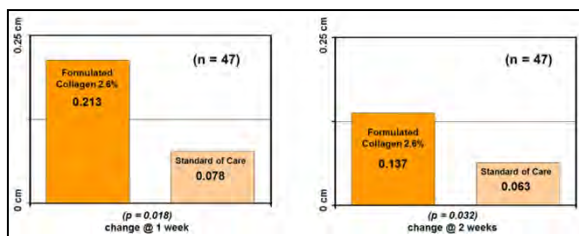


MATRIX Clinical Study Data

The Science of Formulated Collagen Gel



Formulated collagen gel “...causes a large and rapid time-dependent effect on tissue growth rates.” A single application “increases the healing rate of neuropathic DFUs...”, and more frequent applications “...hold promise to significantly improve overall incidence of complete wound closure.”



ORIGINAL RESEARCH – CLINICAL SCIENCE

Formulated collagen gel accelerates healing rate immediately after application in patients with diabetic neuropathic foot ulcers

Peter Blume, DPM¹; Vickie R. Driver, MS, DPM²; Arthur J. Tallis, DPM³; Robert S. Kirsner, MD, PhD⁴; Roy Kroeker, DPM⁵; Wyatt G. Payne, MD⁶; Soma Wali, MD⁷; William Marston, MD⁸; Cyaanoti Dove, DPM⁹; Robert L. Engler, MD¹⁰; Lois A. Chandler, PhD¹¹; Barbara K. Sosnowski, PhD¹¹

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10. Department of Medicine, University of California, San Diego, California, and
11. Tissue Repair Company, Cardium Therapeutics, San Diego, California

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Manuscript received: September 23, 2010
Accepted in final form: December 3, 2010

DOI:10.1111/j.1524-475X.2011.00669.x

ABSTRACT

We assessed the safety and efficacy of Formulated Collagen Gel (FCG) alone and with Ad5PDGF-B (GAM501) compared with Standard of Care (SOC) in patients with 1.5–10.0-cm² chronic diabetic neuropathic foot ulcers that healed < 30% during Run-in. Wound size was assessed by planimetry of acetate tracings and photographs in 124 patients. Comparison of data sets revealed that acetate tracings frequently overestimated areas at some sites. For per-protocol analysis, 113 patients qualified using acetate tracings but only 82 qualified using photographs. Prior animal studies suggested that collagen alone would have little effect on healing and would serve as a negative control. Surprisingly trends for increased incidence of complete closure were observed for both GAM501 (41%) and FCG (45%) vs. Standard of Care (15%). By photographic data, Standard of Care had no significant effect on change in wound radius (mm/week) from during Run-in to Week 1 (0.06 ± 0.32 to 0.78 ± 1.53 , $p=ns$) but both FCG (0.08 ± 0.61 to 1.97 ± 1.77 , $p < 0.002$) and GAM501 (0.02 ± 0.58 to 1.46 ± 1.37 , $p < 0.002$) significantly increased healing rates that gradually declined over subsequent weeks. Both GAM501 and FCG appeared to be safe and well tolerated, and alternate dosing schedules hold promise to improve overall complete wound closure in inadequately powered trials.

Approximately 24 million people in the US have diabetes and 800,000 new cases are identified each year.¹ Many diabetic patients develop diabetic peripheral neuropathy. Among all diabetic patients 15% will eventually develop a Diabetic neuropathic Foot Ulcer (DFU), 25% of whom will have a foot amputation and subsequent 3-year survival rate of 50%, despite currently available therapies.² The current Standard of Care (SOC) for DFU includes surgical debridement, moist dressing changes, and offloading.³ SOC treatment results in healing incidences of approximately 25% after 12 weeks and 30% after 20 weeks.⁴ In chronic DFU, the healing process is impaired in part due to deficiency of growth factors.^{5–8} Currently available secondary interventions include living skin equivalents (e.g., Apligraf, Organogenesis Inc., Canton, MA; Dermagraft, Advanced Biohealing Inc., Westport, CT), Becaplermin (Regranex, platelet-derived growth factor-B homodimer [PDGF-BB], Systagenix Wound Management, Chigraiv, UK), hyperbaric oxygen, negative

pressure devices, antibiotics for infection, and specialized dressings. These interventions provide moderate improvement over SOC, generally only 15–20%, and may be expensive and time consuming. For example Becaplermin is

Ad5	Adenovirus serotype 5 vector
Ad5PDGF-B	E1-deleted adenovirus serotype 5 encoding human platelet-derived growth factor-B
CFU	Colony forming unit
DFU	Diabetic foot ulcer
DSMB	Data and safety monitoring board
FCG	Formulated Collagen Gel
GAM501	Gene Activated Matrix 501, a proprietary product
ITT	Intention to treat
PDGF-B	Platelet derived growth factor B gene
PDGF-BB	Platelet derived growth factor BB
PP	Per-protocol
SAP	Statistical analysis plan
SOC	Standard of Care

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Wound Repair Regen (2011) 19:302–308 © 2011 by the Wound Healing Society

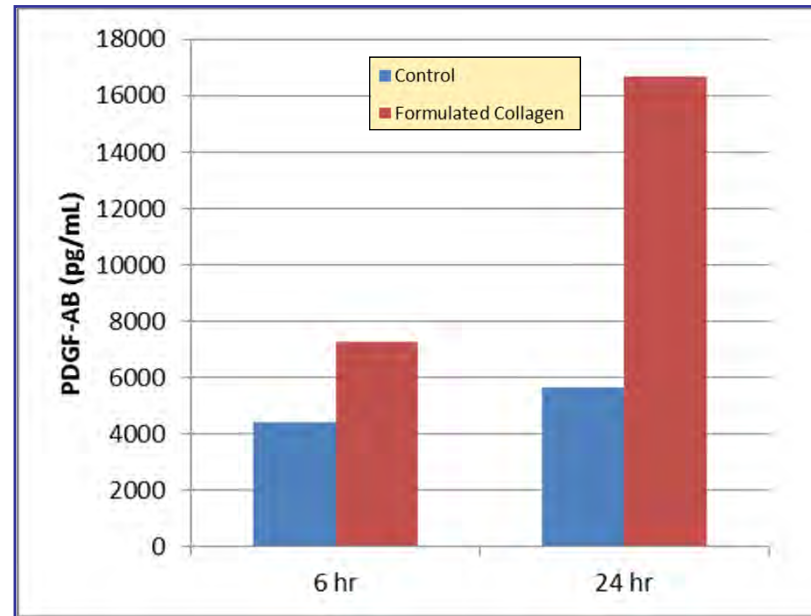
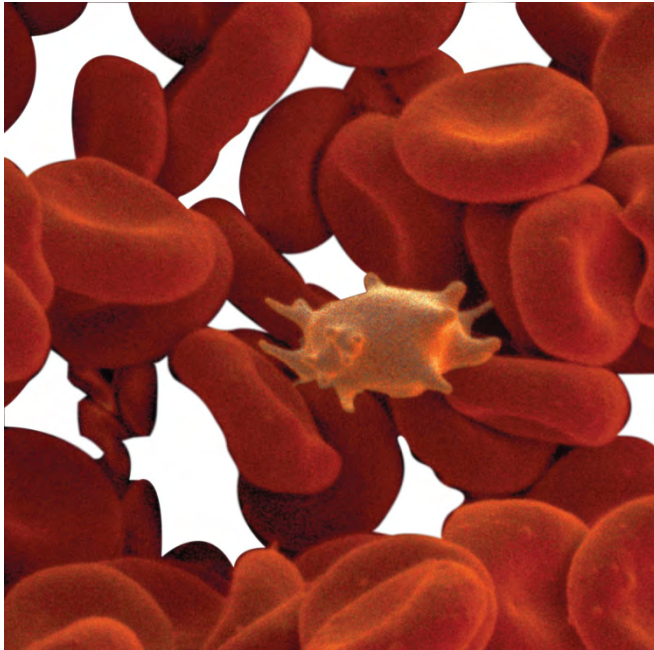
Blume P, et al. *Wound Repair Regen.* 2011 May-Jun;19(3):302-8.

Peer
Reviewed
Medical
Journal
Article

In Vitro Research Study Data

The Science of Formulated Collagen Topical Gel

Activated Platelet Release of PDGF





“ASPIRE”
Phase 3 / Registration
Clinical Study
Angiogenic Therapy

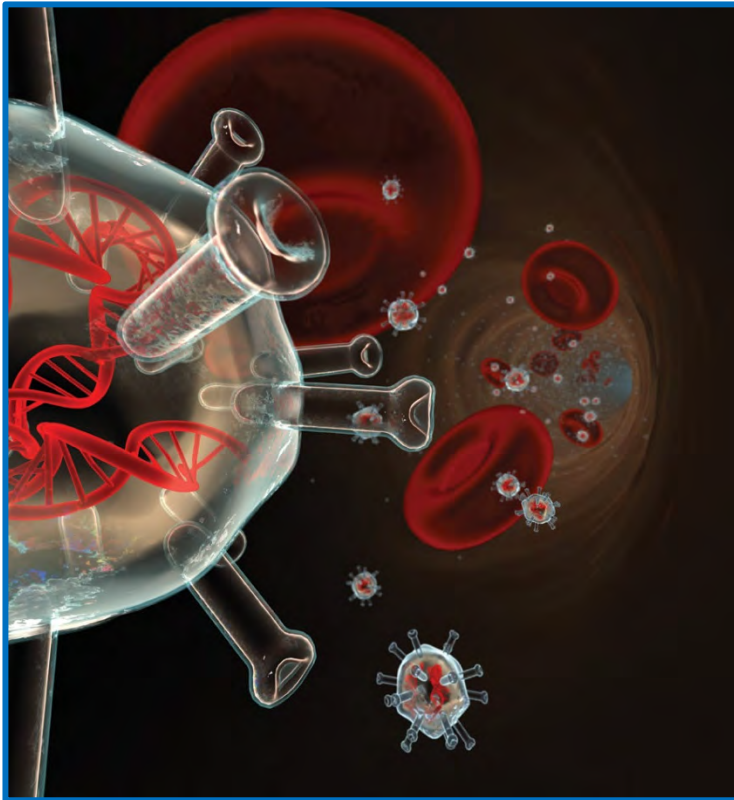
Regenerative Medicine for
Interventional Cardiology



Generex Cardio Chant



Generx[®] Pioneering DNA-Based Regenerative Medicine



DNA-based therapy is designed to enable a patient's own cells to produce a therapeutic protein directly where it is needed in the body. The Generx product candidate is designed to induce localized angiogenic growth factor production following its one-time delivery to stimulate the growth of microvascular circulation.



Scientific Overview and Therapeutic Rationale

DNA-Based Cardiovascular Therapeutics

- New regenerative medicine biological tools for interventional cardiology
- Leverages the healing power of cardiac plasticity
- Proprietary, catheter-based intracoronary delivery approach during an angiographic procedure
- One-time non-surgical treatment
- DNA transgene delivery and CAR receptor-based preferential cardiac uptake



- Ischemic injury (coronary heart disease or heart attack) is a required precursor for effective growth factor DNA-based therapy
- Designed to stimulate microvascular cardiac angiogenesis
- Driven by upstream regulatory gene that stimulate a cascade of other important growth factors
- First DNA-based biologic to advance to U.S. FDA Phase 3 (with fast track status) and Registration / Phase 3 Study in Russia





GENERX™ [Ad5FGF-4]

Product Candidate

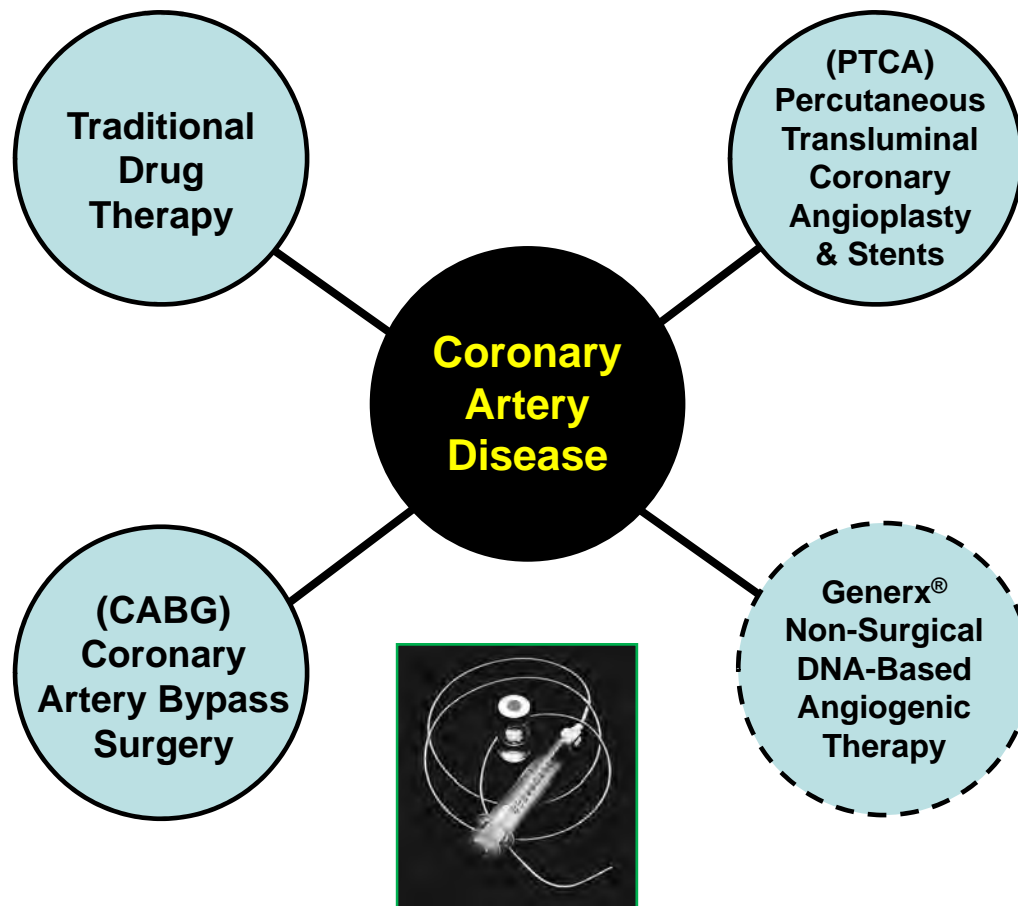


Generx [Ad5FGF-4] represents a new regenerative medicine therapeutic class of DNA-based biologics for interventional cardiology that is designed to promote a disease-modifying physiological response which stimulates the growth of microvascular circulation based on the one-time administration, using a standard cardiac catheter, as a treatment for patients with advanced coronary artery disease.

Generx is currently being developed for international markets outside the United States as a treatment alternative for patients who may not have access to costly and invasive advanced care revascularization procedures, including coronary artery bypass surgery and angioplasty/stents, or may not be optimal candidates for these procedures.



Potential Therapeutic Positioning: Generx® / Cardionovo™





Potential Generx® [Ad5FGF-4] Medical Indications

Based on Clinical Study Design

- Patients with stable angina pectoris due to myocardial ischemia
 - Patients with stable angina pectoris who have already had coronary bypass surgery but have persistent angina
 - Patients who have had angioplasty or stenting but who continue to have symptoms of myocardial ischemia
 - Patients who are undergoing angioplasty in whom revascularization is judged to be incomplete
 - Patients who are undergoing angioplasty with at risk myocardium downstream from a coronary stenosis that can not be adequately dilated
 - Patients who have evidence of silent ischemia, as indicated by intermittent electrocardiographic changes during ambulatory monitoring, or ventricular contraction abnormalities during stress. Silent ischemia is a risk factor for subsequent major cardiac events
- Patients who have recurrent ischemic episodes under observation during or after an acute myocardial infarction
 - Patients with ischemic heart disease who desire or need revascularization but do not have access to coronary bypass surgery or angioplasty
 - Patients who would benefit from revascularization (as above) but who are at high risk for invasive procedures or who do not want invasive procedures
 - Patients undergoing cardiac catheterization at a facility that does not perform angioplasty who need revascularization
 - Patients undergoing routine diagnostic cardiac catheterization for coronary artery disease who have any of the indications above. Generx may obviate the need for subsequent referral for bypass surgery or for angioplasty



Generx[®] Late-Stage Clinical Development



CARDIUM

Angiogenic Therapy:

Leading the Revolution
into New Frontiers of
Cardiovascular Medicine

GENERX[®]
Product Candidate

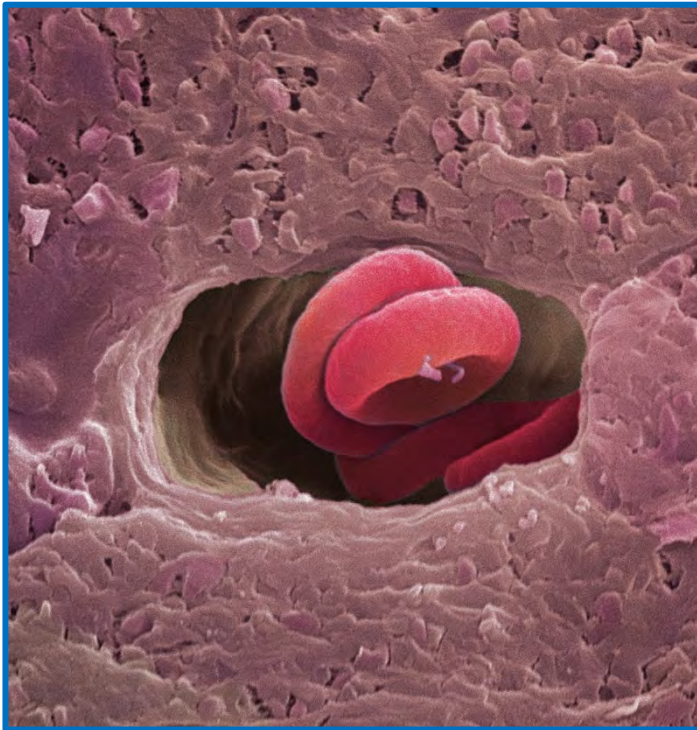
You Tube[™] Cardio-Chant
New Global Pathways

NYSE Amex: CXM
www.cardiumthx.com

Learn more about the ASPIRE Generx[®] International
Phase 3 / Registration Clinical Trials, visit www.clinicaltrials.gov



 **Generx® Understanding the
Beauty of Cardiac Physiology**



Colored magnification: x3000 at 6x7cm size.

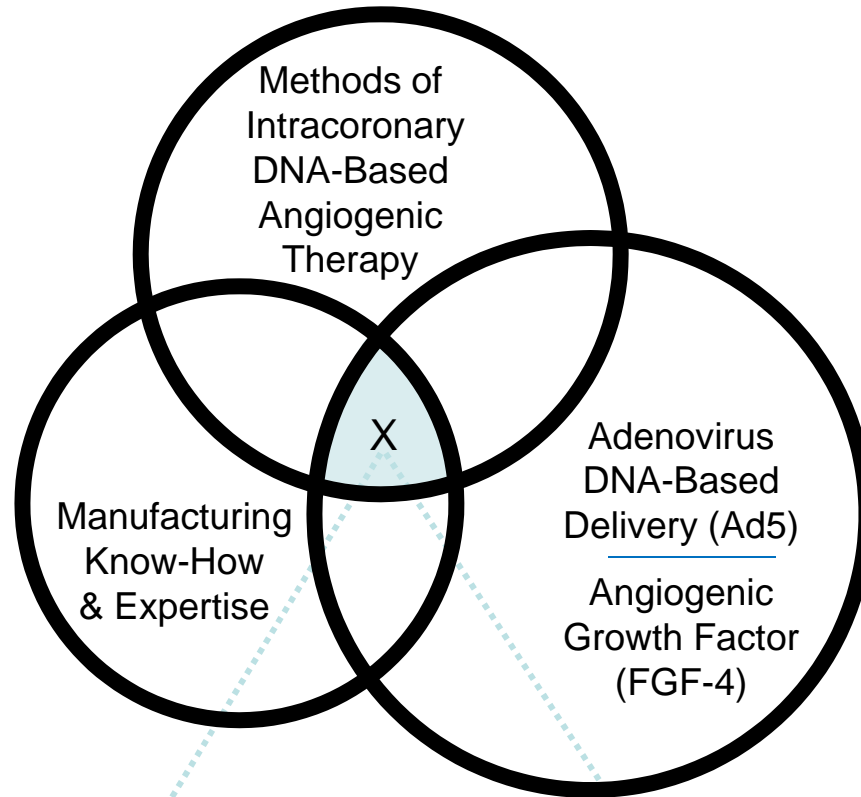



Microvascular Pathways

When infused into the coronary arteries using a non-surgical cardiac catheter, the Generx product candidate travels through the coronary microvascular circulation into the small caliber capillaries where it is believed to be taken up by the myocardium.



Technology Platform: Non-Surgical DNA-Based Angiogenic Therapy

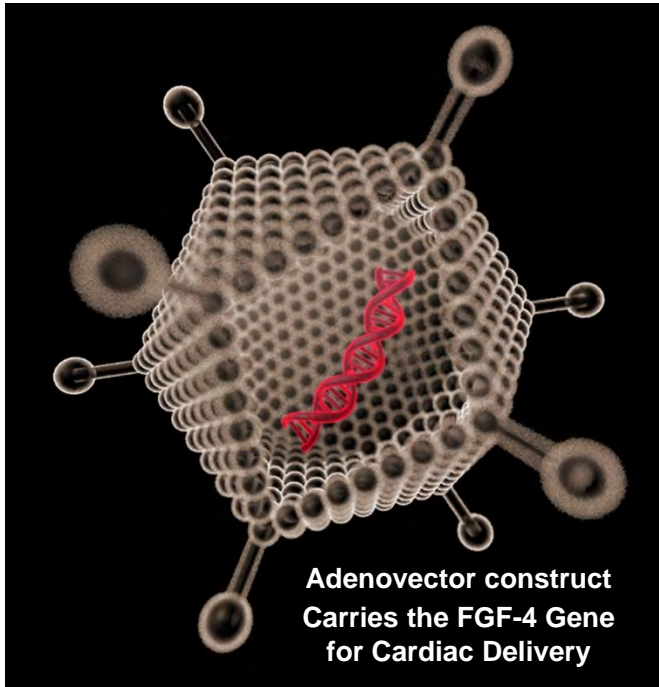


 **Generx[®] [Ad5FGF-4]**
(alferminogene tadenovec)





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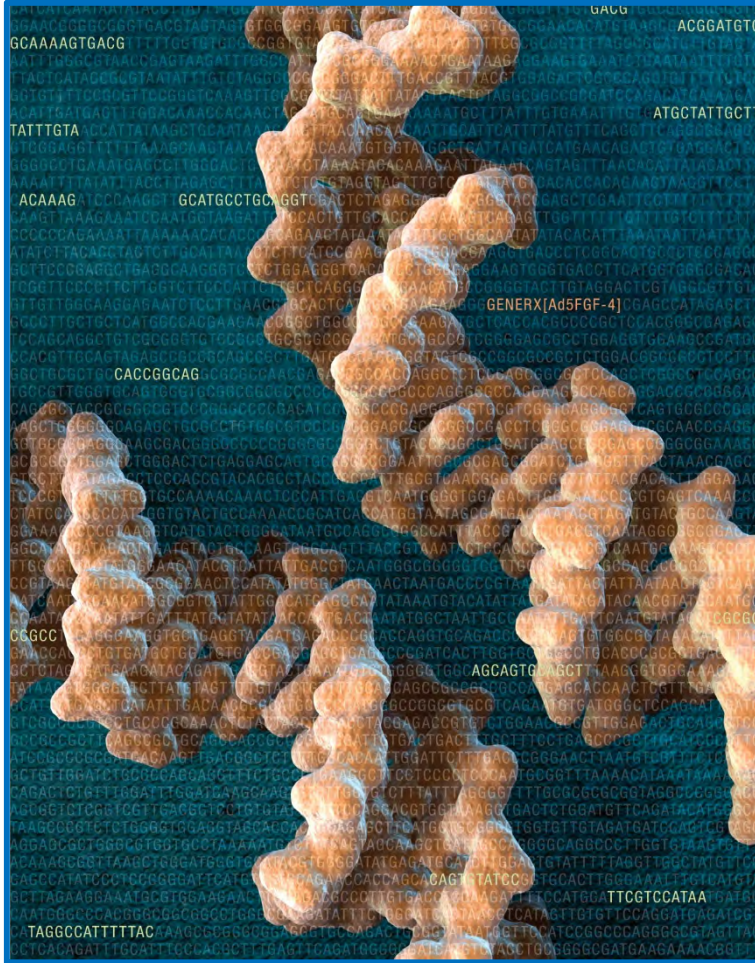
DNA-Based Adenovector Cassette

- Demonstrated CV Safety Database with FDA
- Established FDA Manufacturing Standards
- High Cardiac Transfection Levels due to a Binding Affinity with CAR Receptors and Enhanced by Ischemia
- Transient Expression - - Does Not Integrate into Host Genome
- Manufacturing in High Titer
- Easily Manipulated
- Relatively Low Cytotoxicity
- Mutagenesis Improbable
- Very Favorable Manufacturing Cost

Research Studies: Intracoronary Administration	Coronary Extraction Rate
Pre-Clinical Porcine Study Giordano et al. <i>Nat Med</i> 1996;2:(5):534	98% (mean)
Phase 1/2 Clinical Study – AGENT Trial Grines et al. <i>Circulation</i> 2002;105:1291	87% (median)



Generx® Leveraging the Power of Biology









Digital illustration of DNA.



This illustration utilizes computer models of DNA-based on data generated by x-ray crystallography, a technique for determining the structure of a molecular sample, together with a portion of the DNA sequence of Generx (Ad5FGF-4), Cardium's lead clinical product candidate.



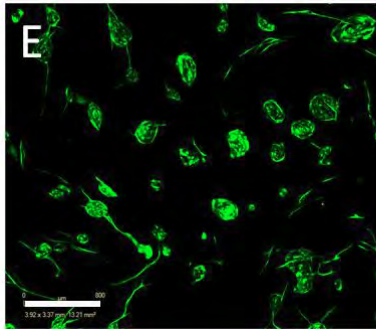
Generx[®] FGF-4 Gene Functional Activities

	Regulates angiogenesis
	Signal peptide – secreted FGF protein
	Binds to extracellular matrix proteins
	Abundant FGF-4 receptors found in cardiac tissue
	Upstream growth factor that can recruit and stimulate responses in downstream target cells
	Appears to require ischemia induced co-factors to augment the angiogenesis process

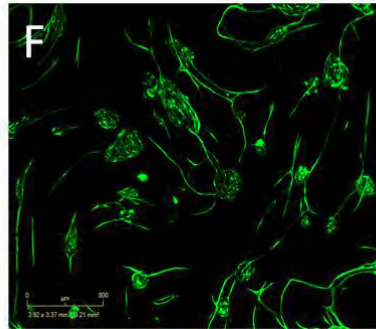


rhFGF-4 Dose Response Bioactivity Assay

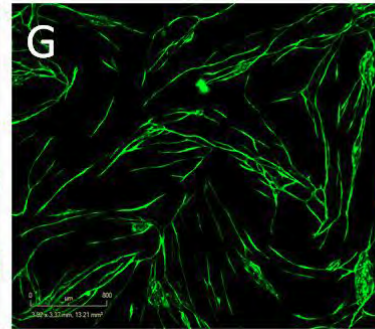
Visualization of the Angiogenic Process by Endothelial Tube Formation



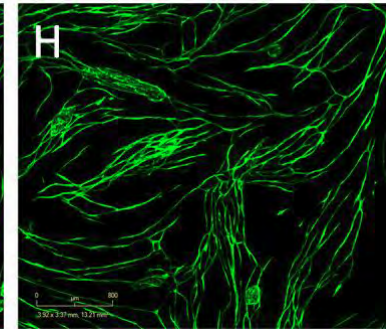
1ng/mL



2ng/mL



4ng/mL



8ng/mL

Representative Images (T=13.5 days) of rhFGF-4 stimulation of angiogenic networks in the Essen BioScience HUVEC Tube Formation Assay. **E**, 1ng/mL rhFGF-4 induced HUVEC clustering as well as a small amount of tube formation. **F**, 2ng/mL rhFGF-4 induced clusters and tube formation. **G**, 4ng/mL rhFGF-4 initiated HUVEC differentiation into longer tubes and more complex networks, as observed by the increase in branching. **H**, 8ng/mL rhFGF-4 stimulate significant tube and network formation.



Coronary Heart Disease

Beneficial Effect of Recrutable Collaterals

A 10-Year Follow-Up Study in Patients With Stable Coronary Artery Disease Undergoing Quantitative Collateral Measurements

Pascal Meier, MD*; Steffen Gloeckler, MD*; Rainer Zbinden, MD*; Sarah Beckh, BS; Stefano F. de Marchi, MD; Stephan Zbinden, MD; Kerstin Wustmann, MD; Michael Billinger, MD; Rolf Vogel, MD, PhD; Stéphane Cook, MD; Peter Wenaweser, MD; Mario Togni, MD; Stephan Windecker, MD; Bernhard Meier, MD; Christian Seiler, MD

Background—The prognostic relevance of the collateral circulation is still controversial. The goal of this study was to assess the impact on survival of quantitatively obtained, recruitable coronary collateral flow in patients with stable coronary artery disease during 10 years of follow-up.

Methods and Results—Eight-hundred forty-five individuals (age, 62 ± 11 years), 106 patients without coronary artery disease and 739 patients with chronic stable coronary artery disease, underwent a total of 1053 quantitative, coronary pressure-derived collateral measurements between March 1996 and April 2006. All patients were prospectively included in a collateral flow index (CFI) database containing information on recruitable collateral flow parameters obtained during a 1-minute coronary balloon occlusion. CFI was calculated as follows:

$$CFI = \frac{P_{occl} - CVP}{P_{ao} - CVP} \quad (1)$$

where P_{occl} is mean coronary occlusive pressure, P_{ao} is mean aortic pressure, and CVP is central venous pressure. Patients were divided into groups with poorly developed ($CFI < 0.25$) or well-grown collateral vessels ($CFI \geq 0.25$). Follow-up information on the occurrence of all-cause mortality and major adverse cardiac events after study inclusion was collected. Cumulative 10-year survival rates in relation to all-cause deaths and cardiac deaths were 71% and 88%, respectively, in patients with low CFI and 89% and 97% in the group with high CFI ($P = 0.0395$, $P = 0.0109$). Through the use of Cox proportional hazards analysis, the following variables independently predicted elevated cardiac mortality: age, low CFI (as a continuous variable), and current smoking.

Conclusions—A well-functioning coronary collateral circulation saves lives in patients with chronic stable coronary artery disease. Depending on the exact amount of collateral flow recruitable during a brief coronary occlusion, long-term cardiac mortality is reduced to one fourth compared with the situation without collateral supply. (*Circulation*. 2007;116:975-983.)

Key Words: angiogenesis ■ collateral circulation ■ coronary circulation ■ prognosis ■ survival

The coronary collateral circulation has long been recognized as an alternative source of blood supply to a myocardial area jeopardized by ischemia. Well-grown versus poorly grown collateral arteries in humans have been suggested to exert a beneficial effect on infarct size,¹⁻³ ventricular aneurysm formation,^{6,7} and ventricular function.^{5,8} A reduction in nonfatal cardiovascular events during various follow-up durations has been demonstrated among patients with versus those without angiographic coronary collaterals in the setting of chronic stable coronary artery disease (CAD).^{9,10} Conversely, a study performed in a population with more extended CAD has found that the angiographic

presence of collaterals may mark an unfavorable prognosis.¹¹ In the setting of acute myocardial infarction treated by primary percutaneous coronary intervention (PCI), there have

Clinical Perspective p 983

been also controversial results regarding the effect of angiographically present collaterals, including 1 investigation without a beneficial effect on 6-month survival rate¹² and another study showing reduced in-hospital mortality.¹³ This debate on the relevance of the human coronary collateral circulation has a long-lasting "tradition."¹⁴ Much of the argument was and still is likely due to the blunt method of gauging human

Received March 19, 2007; accepted June 25, 2007.

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*The first 3 authors contributed equally to this work.

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Circulation is available at <http://circ.ahajournals.org>

DOI: 10.1161/CIRCULATIONAHA.107.703989

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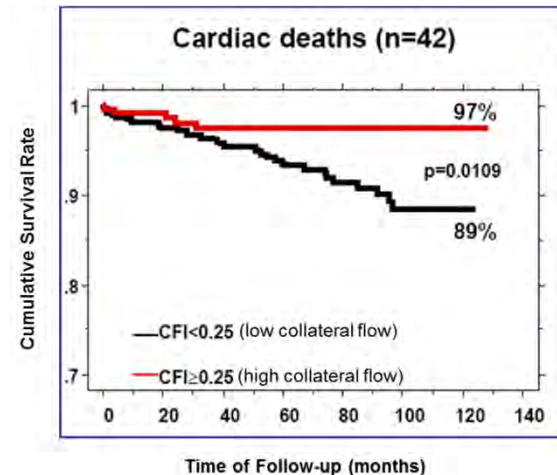
Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association
Learn and Live™

Beneficial Effects of a Disease-Induced Angiogenic Vascularization Summary Research

“A well-functioning coronary collateral circulation saves lives in patients with chronic stable coronary artery disease.”

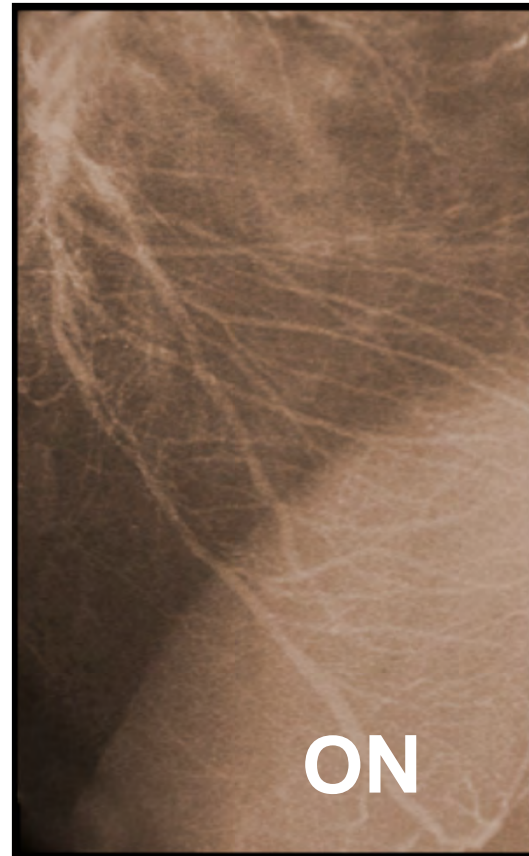


From Meier et al. *Circulation* 2007; 116:975-83.



Coronary Artery Disease

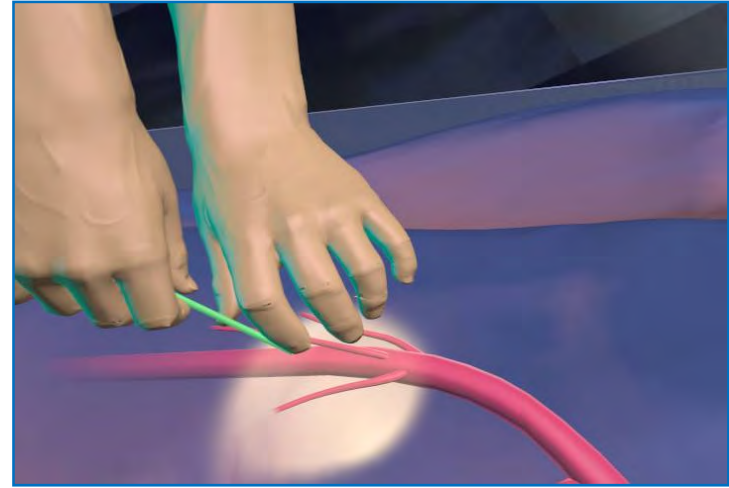
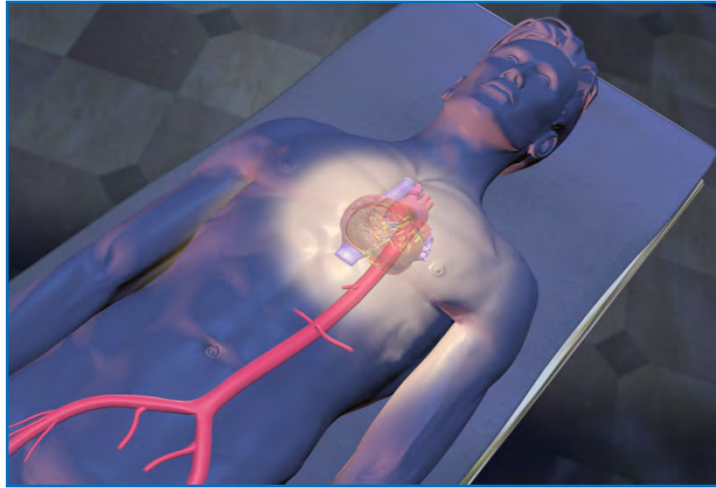
Natural Disease-Induced Angiogenic Vascularization





Generx[®] [Ad5FGF-4]

Proprietary Intracoronary Administration of DNA-Based Cardiovascular Growth Factor Therapeutic



- Non-surgical delivery by intracoronary administration by interventional cardiologist during an angiogram procedure
- Utilizes standard balloon catheter which can be easily integrated into diagnostic angiogram procedures or with other percutaneous coronary interventions
- New induced transient ischemia / reperfusion techniques are designed to enhance DNA uptake and expression in the heart
- 40% administered to right coronary circulation and 60% to left coronary circulation



The Therapeutic Process of Cardiac Microvascular Angiogenesis

Generx has been evaluated in studies of over 650 patients (including 450 Generx-treated patients) in four multi-center, double-blind, placebo-controlled clinical studies at 100 medical centers. Generx is the most clinically advanced DNA-based cardiovascular angiogenic growth factor therapeutic in the world.

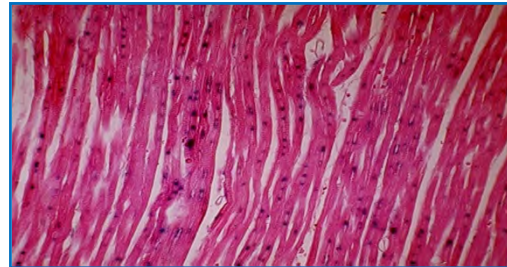


SPECT Imaging

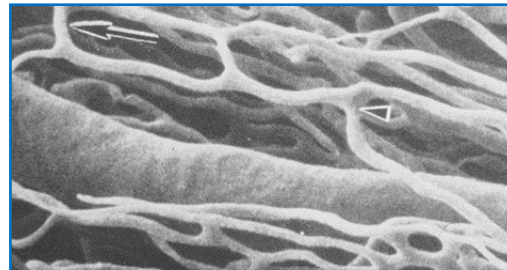
One-Time Treatment



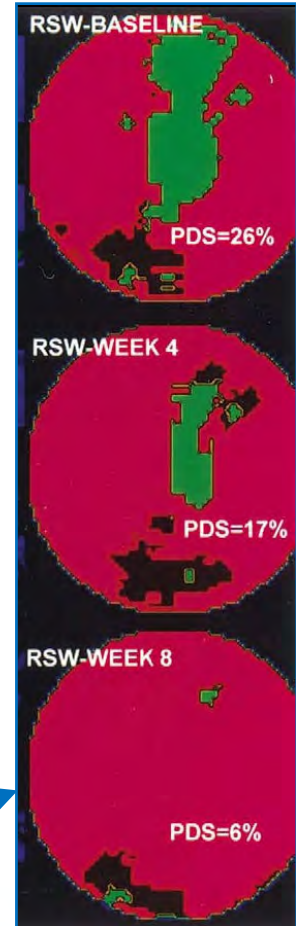
Generx [Ad5FGF-4]
(alferminogene tadenovec)



DNA-Based Delivery



Angiogenic Response

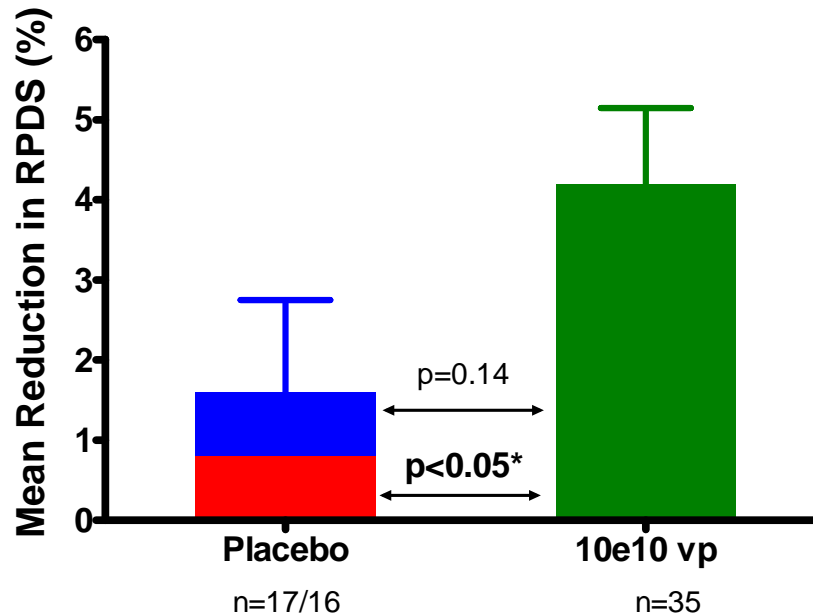


AGENT-2 - Representative Generx-treated patient: 77% improvement in cardiac perfusion at 8 weeks equivalent to bypass surgery and PCI (angioplasty/stenting) at one year.



AGENT 2: Primary Endpoint SPECT Imaging Angiogenic Mechanism of Action Study

Change in Reversible Perfusion Defect 8 Weeks



* Excludes one extreme placebo outlier



Journal of the American College of Cardiology
 Volume 54, No. 4
 April 10, 2009

CLINICAL RESEARCH **Clinical Trials**

A Randomized, Double-Blind, Placebo-Controlled Trial of Ad5FGF-4 Gene Therapy and its Effect on Myocardial Perfusion in Patients With Stable Angina

Cindy L. Grines, MD, FACC; Matthew W. Watkins, MD, FACC; John J. Mahoney, MD, FACC; Ann E. Skovronick, MD, FACC; Jeffrey J. Biale, MD, FACC; Tom Marwan, MSc; Craig Pratt, MD, FACC; Neal Kleiman, MD, FACC; for the Angiogenesis Gene Therapy (AGENT-2) Study Group

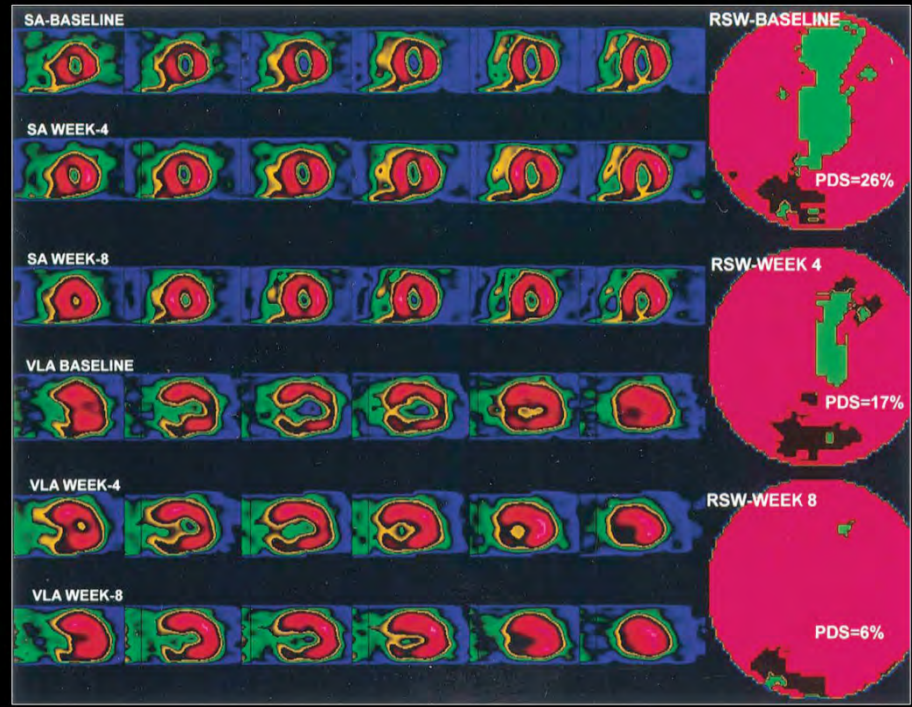
Regal Cell, Michigan; Burlington, Vermont; Houston, Texas; Birmingham, Alabama; Baltimore, Maryland; and Atlanta, New Jersey

OBJECTIVES The primary objective of this study was to determine whether intracoronary administration of the adenoviral gene for fibroblast growth factor (Ad5FGF-4) in coronary arteriovenous patients compared with placebo. Secondary objectives included whether there was improvement in perfusion of the infarcted myocardium using gene-mediated angiogenic growth factors, heparin, and streptokinase. **DESIGN** Randomized, double-blind, placebo-controlled trial of intracoronary administration of Ad5FGF-4 adenoviral gene to coronary artery stenosis. **SETTING** Six centers with stable angina and infarcted myocardium. **PATIENTS** 100 patients with stable angina and infarcted myocardium. **INTERVENTIONS** Ad5FGF-4 adenoviral gene therapy (n = 50) or placebo (n = 50). **MEASUREMENTS AND MAIN RESULTS** At baseline, mean left ventricular ejection fraction (LVEF) was 42.2%. LVEF did not differ between groups. At 4 weeks, mean LVEF was 42.2% in the Ad5FGF-4 group and 41.8% in the placebo group. At 8 weeks, mean LVEF was 42.2% in the Ad5FGF-4 group and 41.8% in the placebo group. **CONCLUSIONS** Intracoronary injection of Ad5FGF-4 showed no encouraging trend for improved myocardial perfusion. However, further studies of therapeutic angiogenesis with Ad5FGF-4 will be conducted. *J Am Coll Cardiol* 2009;54:410-417. © 2009 by the American College of Cardiology.

Myocardial ischemia is a leading cause of death and disability in the developed world. Established treatment for myocardial ischemia has been the revascularization of the coronary arteries using either percutaneous or surgical techniques to improve blood supply to the myocardium. In patients who are not candidates for either percutaneous or surgical revascularization, medical therapy is the mainstay of treatment. Many patients prove to be intractable to medical therapy, and percutaneous or surgical revascularization is associated with a distinct set of risks. Newer approaches to improve blood flow to the myocardium have focused on the biology of endogenous growth and the development of new blood vessels. Despite encouraging animal and non-infarcted patient studies, no proven clinical trials using the angiogenic protein vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF) have reported no significant difference in mortality between the patients who received intracoronary gene therapy compared with placebo (1,2). These negative findings may be due to the short duration of effect of the protein, and may be overcome by administering the gene, which results in sustained production of the angiogenic protein. We have previously shown that intracoronary administration of the gene encoding bFGF-4 delivered using an adenoviral vector improved myocardial perfusion time by 1.5 min compared with 0.5 min in placebo-treated patients with stable angina (3). An increase of 1 min compared with placebo was observed

AGENT-2
Journal of
American College
of Cardiology

GENERX AGENT-2
PHASE 2A STUDY
CLINICAL EFFICACY USING SPECT



Generx-Treated Patient Demonstrating Enhanced Cardiac Perfusion (n=52 / 88% men)

77% Improvement



AGENT 2 - Comparison of SPECT Results to Revascularization and Medical Therapy

Parameter	Coronary Revascularization	Medical Therapy	Generx AGENT-2	
			Placebo	1x10 ¹⁰ vp
Number of Patients	83	206	17	35
Age	66±11	68±10	57±9	59±8
Stress defect extent (%)	18±11	16±10	20±8	20±9
Reduction of reversible defect (%)	-5±12	-0.8±7	-0.8±6	-4±6

From Berman DS, et al.
J of Nuclear Cardiol, 2001; 4:428-437



Generex[®]: Current Global Clinical Study Status

Elements	U.S. Market (AWARE)	International Markets (Initially Russian Federation) (ASPIRE)
Product	Generex[®] [Ad5FGF-4] (alferminogene tadenovec)	CardioNovo [Ad5FGF-4] (alferminogene tadenovec)
Clinical Status	FDA Clearance Phase 3 (with Fast Track Status)	RHA Cleared Phase 3 / Registration Study
Clinical Study Population	300 Women Multi-Center, Randomized, Placebo- Controlled Patient Population	100 Men & Women Multi-Center, Randomized, Controlled Parallel-Group Patient Population
Proposed Medical Indication	Anti-Angina for Refractory Patients who are not Optimal Candidates for Angioplasty / Stents & Bypass Surgery	Myocardial Ischemia as a Treatment Option for Patients Considering Angioplasty / Stents & Bypass Surgery
Clinical Endpoint	Improvement in Exercise Time Based on Treadmill	Improvement in Reversible Perfusion Deficit Based on SPECT Imaging
Clinical Study Status	Pending Completion of International Studies	Initiated March 2012





Clinical Efficacy Measures

ETT



**Exercise Treadmill
Stress Test**
[United States Efficacy Measure]

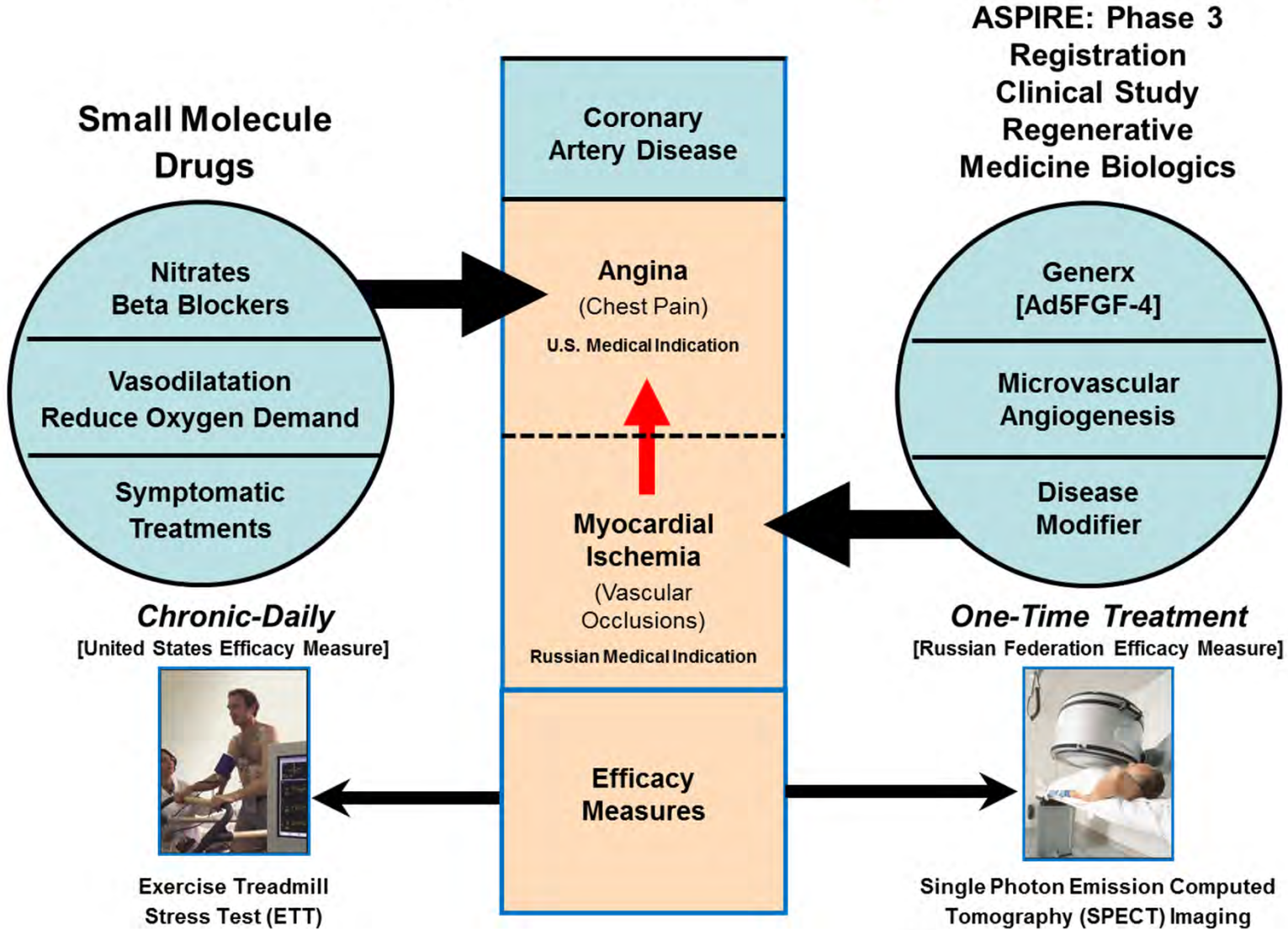
SPECT



**Single Photon Emission Computed
Tomography Stress Test**
[Russian Federation Efficacy Measure]

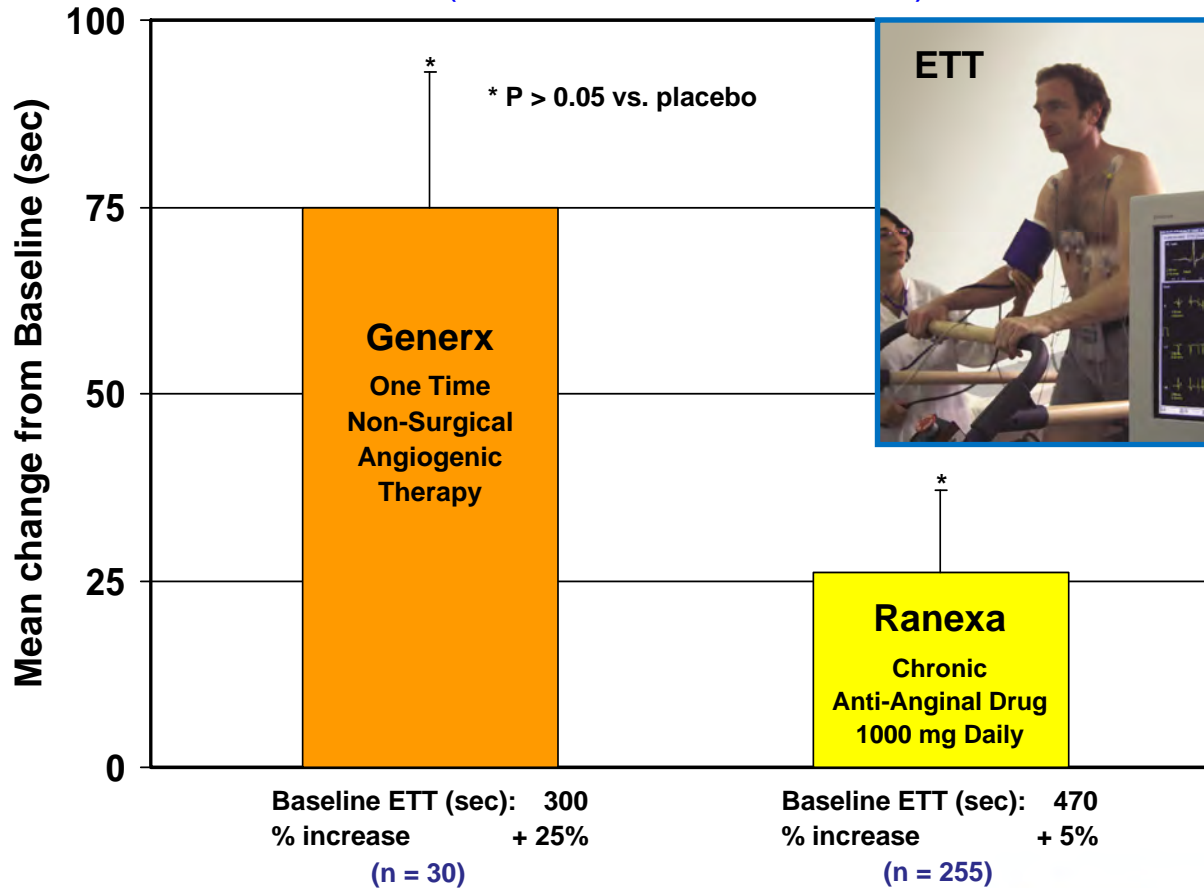


Cardiac Angiogenic Therapy: Efficacy Perspectives

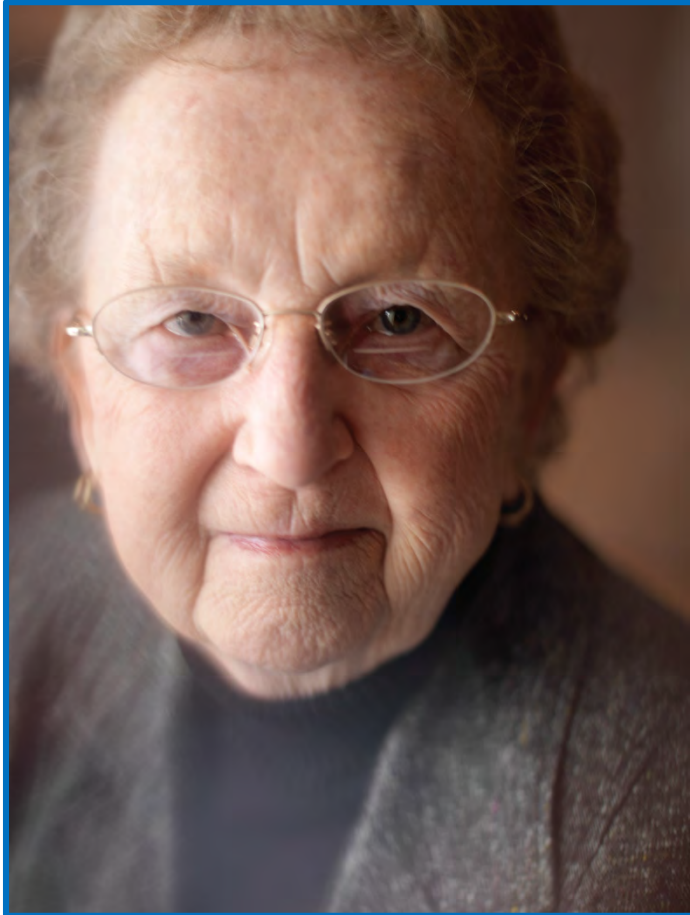


Effect of Chronic Angina Treatment with Ranexa and Single Intracoronary Administration of Generx (Ad5FGF-4) on ETT Duration at 12 Weeks

(Difference from Placebo)



Generx® Patient Pioneers



Marilyn L. was a trial participant in the AGENT-3 clinical trial. She received a one-time treatment of Generx, our DNA-based angiogenic product candidate for patients with recurrent angina due to coronary artery disease.



Generx[®] [Ad5FGF-4]

Product Focus for Russian Federation

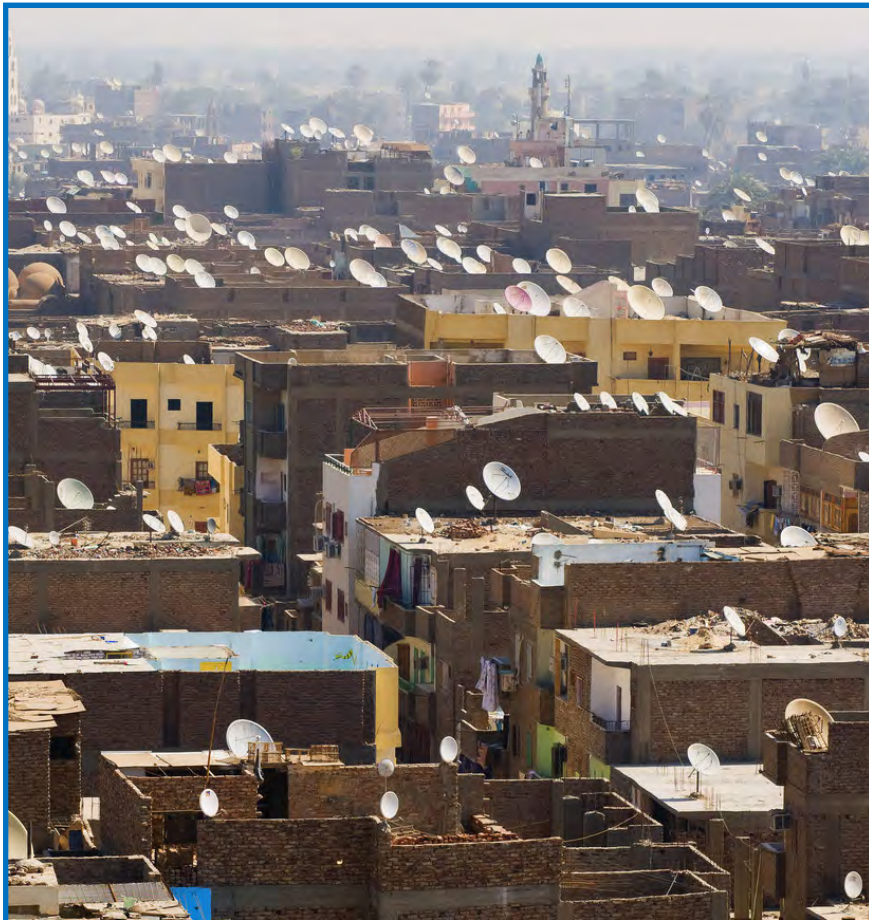
Generx is being developed to promote the growth of microvascular circulation in the heart. It is administered by a cardiologist through a cardiac catheter during an outpatient procedure.

*The product is a new treatment option for **patients with myocardial ischemia due to advanced coronary artery disease that have limited access to advanced medical care** including coronary angioplasty and stents as well as coronary artery by-pass surgery or patients who are not optimal candidates for those procedures.*

A long-term study (n = 845) has shown that patients with a higher collateral blood flow index may have an improved mortality benefit when compared to patients with a relatively lower collateral blood flow index.

Selected Health Statistics Benchmarks		
Demographic Metrics	United States	Russian Federation
Average Life Expectancy - Males	76	64
Cardiovascular Death Rates per 100,000	80	297





Developing new and innovative, cost-effective advanced care for coronary heart disease patients in international markets



Generex Cardio Chant





Generx® Potential Economic Opportunity

Unit Volume Opportunity per Economic Region	Target Revenue per Dose		
	Level I \$2,000 / dose	Level II \$3,000 / dose	Level III \$4,000 / dose
50,000 doses	\$100 Million	\$150 Million	\$200 Million
100,000 doses	\$200 Million	\$300 Million	\$400 Million
150,000 doses	\$300 Million	\$450 Million	\$600 Million
200,000 doses	\$400 Million	\$600 Million	\$800 Million



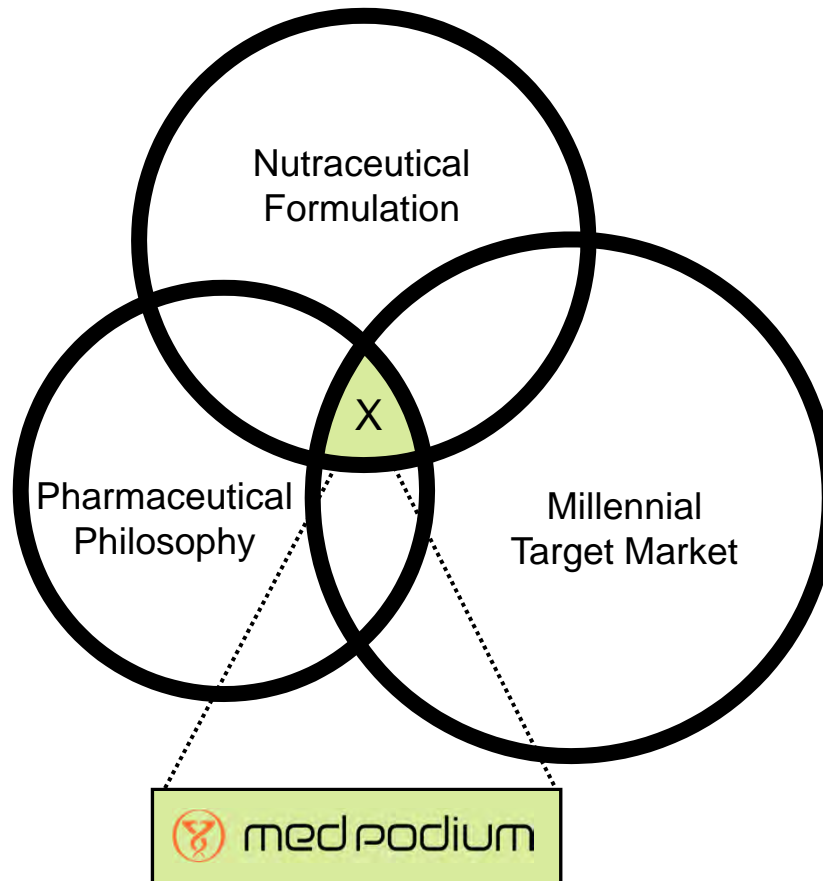
MedPodium Nutra-Apps®



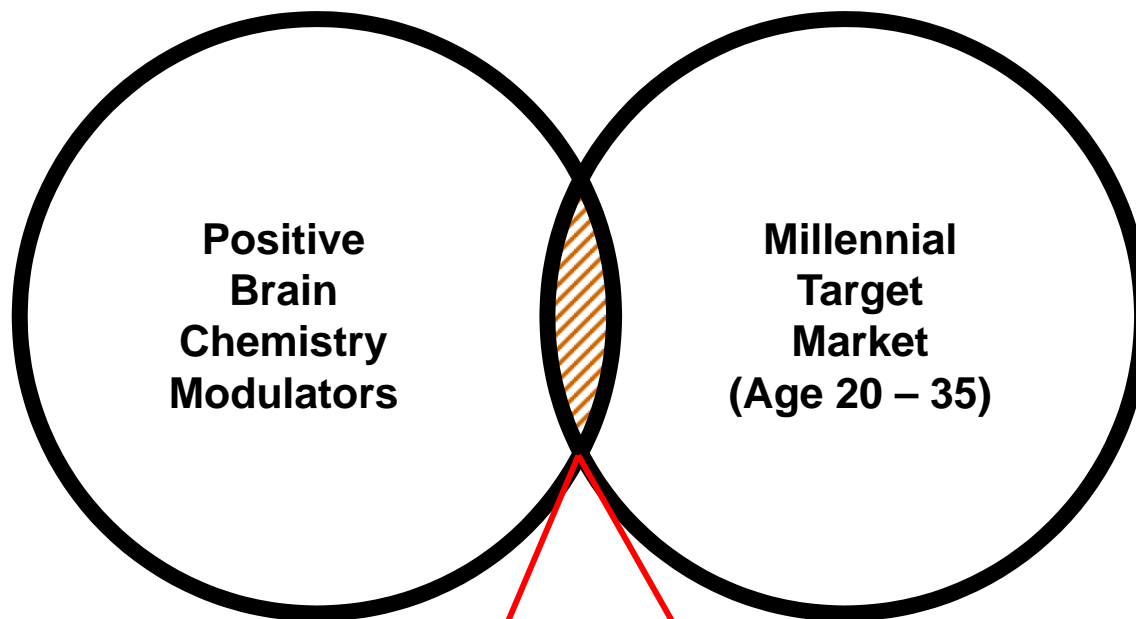
Lifestyle Solutions for Millennials



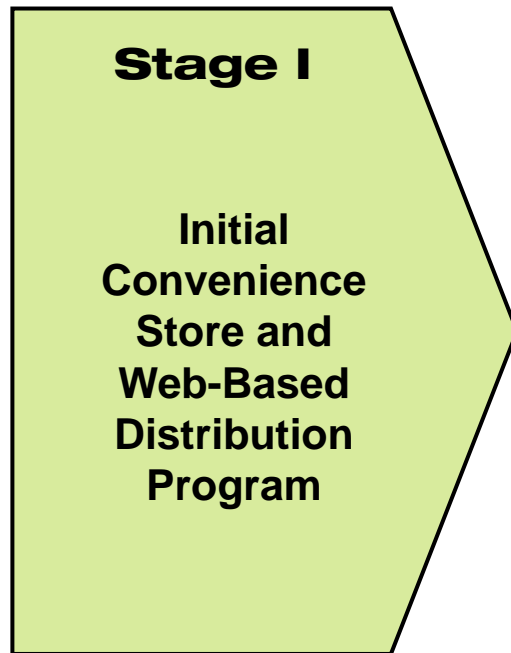
MedPodium Nutra-Apps[®] Product Strategy



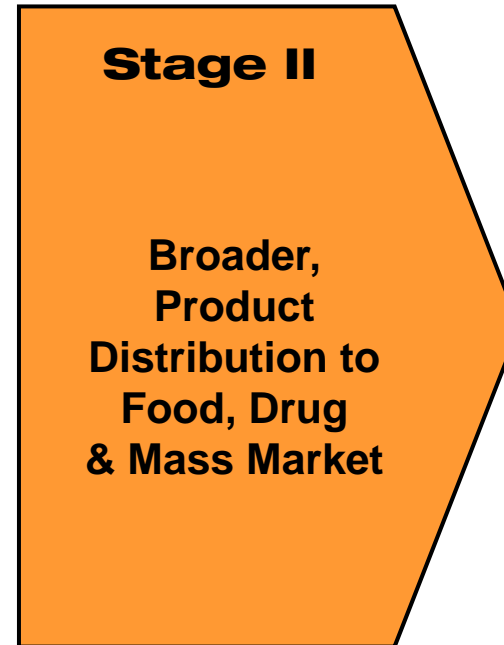
 **MedPodium Nutra-Apps® Product Focus**



 **MedPodium Nutra-Apps[®]**
Commercial Strategy



2012



2013

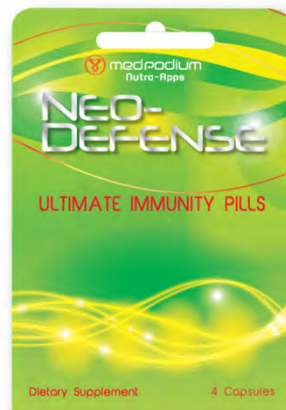
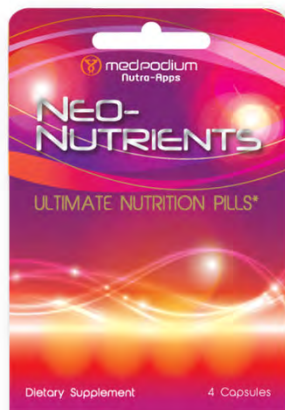
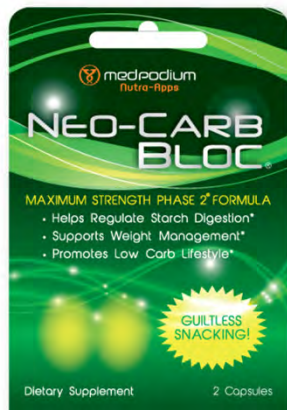


Nutra-Apps® Brand Platform **Selling Points**

- Designed to instantly attract at impulse point-of-purchase.
- Simple, credible "no guesswork" brand names delivering immediate "call to action."
- Small, once-daily dosage for easy compliance, fostering desire for repurchase / loyalty.
- Each formula features a key standardized, scientifically-validated ingredient at the clinically studied amount for efficacy.
- Packaging is designed to comfortably fit in a pocket or purse for use anytime, anywhere – perfect for Millennials' spontaneous and multi-tasking lifestyles.
- The line is priced advantageously: for example, one Neo-Energy pill is equivalent to one energy shot which is a 75% cost saving per pack.
- Nutra-Apps' pills are tasteless, which will never compromise a snack or a meal on-the-go.



MedPodium Nutra-Apps[®] Product Line



How Nutra-Apps Fuel Millennials' Lifestyles

Neo-Energy®

- Used for a morning lift, an afternoon pick-me-up, and for the evenings and nights to extend social time.
- Contains a blend of caffeine, green tea leaf extract and Vitamin B3 (niacin).
- Provides an energy that doesn't cause jitters – and unlike shots, no extra calories, sugar or sweeteners.
- One small pill is equal to the caffeine-content of a premium cup of coffee, or multiple cans of energy drinks.



How Nutra-Apps Fuel Millennials' Lifestyles

Neo-Carb Bloc®

- Allows millennials to keep in shape – and still indulge in pizza, cupcakes, fries with burgers and more.
- Neo- Carb Bloc is the first to feature Phase 2® Carb Controller in a maximum-strength formulation that is more than four times more potent than other generally available Phase 2 products.
- Neo-Carb Bloc has been clinically shown to reduce the enzymatic digestion of dietary starches contained in many carbohydrate-rich foods such as pastas, rice, crackers, breads, pastries, potato chips, and donuts without blocking the absorption of “good” carbs such as cruciferous veggies.
- Neo-Carb Bloc is unique! There is no other “Impulse Buy” product like it on the market today.



How Nutra-Apps Fuel Millennials' Lifestyles

Neo-Chill™

- Used to relax after stressful days; great to help enjoy watching TV/DVDs and playing video games; also for relieving stress in anxious conditions (tests, job interviews).
- Features 200 mg Suntheanine®, a patented, 100% pure L-theanine, clinically shown to promote an alert state of relaxation.
- Does not cause drowsiness, so it may be used safely to combat feelings of high stress.



Investment Highlights

- Capital-efficient, asset-based, business strategy focused on finding “diamonds in the rough” and leveraging research and development investments by big pharma, venture and institutional investors | Strategy intended to provide a diversified and more balanced portfolio of risk/return opportunities
- Excellagen® Wound Care Management Platform: Initial product has now received FDA 510(k) clearance for U.S. marketing and sales | Initial focus on diabetic foot ulcers | Other product line extensions currently under consideration | Consistent with business strategy, support initial market introduction, seed the market, then monetize through strategic partnerships and distribution deals in U.S. and international markets | Initiated product introduction in March 2012 | Logistics Partner: Smith Medical Partners | First international distribution deal: BL&H (Korea)
- Generx® Global Cardiovascular Platform: International cost-efficient “ASPIRE” Phase 3 / Registration Study now underway | Study Design: 100 patients with SPECT imaging efficacy endpoint | Initial medical focus: Patients in Russia with advanced coronary artery disease who have limited access to costly and rationalized bypass surgery and angioplasty / stent procedures (Russian CVD death rates 4X greater than U.S.; average life expectancy for males – 64 years) | Initiated clinical study in March 2012 | Russian clinical development partner: bioRasi / Vendevia Group
- MedPodium® In-House Brand Platform: Portfolio of premium, science-based, easy-to-use one and done nutraceuticals designed to promote personal health and well being for today's active, informed and professional lifestyles | Seeking revenue-based strategic acquisitions in the nutraceutical space | Initial retail launch of Nutra-Apps® products via web-based venues and selected geographic areas now underway
- Acquisition Search: Challenging economic environment continues to generate a steady stream of deal flow | CXM remains highly selective focused primarily on late-stage clinical development opportunities and revenue-based businesses and financial services to leverage Cardium’s skill set in the fields of biostatistics, finance, science and medicine
- Key Investor Metrics: No outstanding debt, substantial trading liquidity, continuing news flow expected from three product platforms and other opportunities under consideration | Current capital structure provides for significant economic upside potential as CXM executes its asset-based business strategy | Capital-efficient ATM Shelf Registration in place





CARDIUM

MEDICAL OPPORTUNITIES PORTFOLIO