# Global Cardiovascular Innovation Center 2008 YEAR END REPORT



Bringing High-Impact Cardiovascular Innovations to the Market

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The Global Cardiovascular Innovation Center acknowledges the contribution of the State of Ohio, Department of Development and the Third Frontier Commission, which provided funding in support of this project.

# Dear Colleagues,

On behalf of the entire Global Cardiovascular Innovation Center team, I am pleased to present this end of year report for 2008. This past year was one of major accomplishment in establishing the process and resources by which GCIC fosters economic development and growth within Ohio. We synthesized our focus on four main initiatives – formation, expansion, attraction and retention of businesses in Ohio engaged in developing solutions for the diagnosis and treatment of cardiovascular disease. In each area we provided significant resources to establish and support innovative and meaningful commercialization opportunities.

We awarded commercialization funding grants totaling \$3.5M to nine companies, bringing the total number of companies and projects in the portfolio to 31 and total investment to \$10.5M. We launched our fourth round of funding in October, attracting 23 new applications, and we will close the round with new grants being awarded in January 2009. We reported significant growth and progress of these portfolio companies, which added more than 50 incremental jobs and secured \$70M in additional funding to carry on further development.

We awarded our first grant to assist company relocation to the State. We have a healthy funnel of companies from other states and countries likewise interested in establishing new operations within Ohio, and we expect to announce additional successes from these efforts in 2009.

We have broken ground on a new 50,000 square foot incubator facility that will serve as the center for GCIC activities and support for all of our efforts, as well as provide a home for many of the companies that we are nurturing in their early development.

We took on added responsibility as another Ohio Third Frontier-funded initiative, the Atrial Fibrillation Innovation Center (AFIC), was brought under the GCIC umbrella. Together we will provide even broader support and resources to cardiovascular research and development.

Finally, we completed establishing our team of dedicated and enthusiastic staff to provide technical and business guidance to our portfolio companies and coordination among our institutional and business development partners.

This report highlights many of these accomplishments and profiles some of the companies that we have funded.



Sincerely, Mark Low Managing Director, GCIC

# About the Global Cardiovascular Innovation Center

The Global Cardiovascular Innovation Center (GCIC) is a \$250 million product development consortium established by the State of Ohio that assists cardiovascular technology companies. The consortium is made up of Case Western Reserve University, Cleveland Clinic, The Ohio State University, the University of Cincinnati, the University of Toledo, University Hospitals of Cleveland, statewide economic development partners and leading industry partners from across the country.



With the mission of becoming the international leader in developing, incubating and commercializing cardiovascular technology, GCIC was launched in 2007 with a \$60 million grant from the Ohio Third Frontier Project through the Ohio Department of Development. The Third Frontier recognized GCIC's multi-organizational collaborative structure and its potential to have a significant, sustainable impact on the state's economy by naming it as a Wright Mega-Center of Innovation – the only Third Frontier grantee thus far to receive this designation.

Concentrating on Ohio's clusters in biomedical research and development, GCIC is rapidly translating its mission into action. The consortium partners are unified in their commitment to establishing and sustaining Ohio as a premier location for cardiovascular businesses.

With the goal of creating or attracting 40 companies and creating 850 associated jobs, \$30 million of the original grant is earmarked to provide seed funding for start-up companies. Simultaneously, GCIC is working to attract established companies to Ohio, assist existing companies in their expansion into new growth areas and grow the pool of entrepreneurial management talent.





We are pleased to announce that the Atrial Fibrillation Innovation Center (AFIC) is now operating under the GCIC umbrella – continuing, in partnership with GCIC, the battle against atrial fibrillation.

AFIC, another Ohio Third Frontier-funded Wright Center of Innovation, pursues its multidisciplinary assault on atrial fibrillation through a distinguished team of accomplished laboratory and clinical researchers at Ohio's leading academic research institutions. In collaboration with AFIC's corporate partners, they are making significant progress in developing new diagnostic and therapeutic options for the management of atrial fibrillation.

AFIC's merger under GCIC ensures that current projects will continue while new atrial fibrillation-related projects are brought on board with GCIC support. It also provides GCIC companies with access to AFIC's outstanding research capabilities and state-of-the-art preclinical facility.

The medical implications of AFIC's work extend worldwide, and the center has pioneered new approaches to clinical care. Closer to home, AFIC is contributing to Ohio's economic development goals by making an impact on company and product formation, job creation and economic growth.

# Institutional Partners

At the heart of GCIC are the six institutional partners that make up the consortium. Individually, they are among Ohio's leading academic, research and medical centers, recognized as hubs of innovation and discovery and leaders in cardiovascular disease research and care. United for a common purpose through GCIC, they represent a formidable force capable of making a major impact on the healthcare landscape to the state's economic benefit.

#### **Cleveland Clinic**

GCIC is led by Cleveland Clinic, a not-for-profit, multispecialty academic medical center that integrates clinical and hospital care with research and education. Founded in 1921, Cleveland Clinic today is one of the largest and most respected hospitals in the country, which for 14 years in row has been ranked #1 in the United States in cardiac care by *U.S. News and World Report's* America's Best Hospitals survey. Basic research in the Lerner Research Institute is the launching pad for translational research that brings new devices, technologies and pharmaceuticals to patient care. Cleveland Clinic spearheaded the effort that resulted in GCIC's grant from the Ohio Department of Development.

#### Case Western Reserve University

A leader among independent research universities, Case Western Reserve University (CWRU) boasts a 140-year legacy of pioneering medical research and outstanding medical education. Today the CWRU School of Medicine is one of the largest biomedical research institutions in the nation, as measured by funding received from the National Institutes of Health (NIH).

#### The Ohio State University

The Ohio State University is among the top public research universities in the country with more than \$7 billion in total research awards. Ohio State ranks second in the country among all universities for industry-sponsored research and has proven proficiency in developing research efforts into commercialized products. GCIC benefits from The Ohio State University's wide-ranging expertise in biomedical research and development across many different fields, including cardiovascular medicine and biomedical engineering.







#### The University of Cincinnati

The University of Cincinnati (UC) and Cincinnati Children's Hospital together are international leaders in cardiac research. Investigators in the UC Cardiovascular Research Center pursue the cellular and genetic causes of heart disease, and the UC Medical Center, a major referral center for cardiac care and heart transplantation, operates state-of-the-art cardiovascular diagnostic laboratories and a heart failure transplantation clinic.

#### The University of Toledo

The University of Toledo (UT) is a public metropolitan university that merged with The Medical University of Ohio in 2006 to create a center for broad-based innovation and focus in academic medical research. The University of Toledo Health Science Campus is home to UT Medical Center hospitals and clinics and many of UT's health science research and education programs that are teaching the next generation of physicians, nurses and other healthcare professionals. Among UT's featured academic strategies is a commitment to the pursuit of basic, translational and clinical research to advance cardiovascular care.

#### University Hospitals of Cleveland

University Hospitals is a 947-bed tertiary medical center affiliated with Case Western Reserve University (CWRU) and the CWRU School of Medicine. University Hospitals' Center for Clinical Research is among the largest biomedical research centers in the state of Ohio and one of the top 15 in the country. The Cardiovascular Research Center is dedicated specifically to improving the diagnosis and treatment of cardiovascular diseases. University Hospitals has a longstanding tradition of partnering with the CWRU School of Medicine in the pursuit of translational research that advances industry standards and improves the quality of patient care.







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# Technology Commercialization

GCIC is proud to support the following companies that are developing innovative solutions for the diagnosis and treatment of cardiovascular disease and contributing to Ohio's economic development. The portfolio is diverse and well-rounded, with representation across a full range of diagnostic, treatment and monitoring solutions in cardiovascular medicine and surgery, including biopharmaceuticals, stem cell products, devices, equipment and healthy lifestyle products.



**AcelleRX** Therapeutics Headquarters: Cleveland

Core business: Cell-based

regenerative therapies for treating heart attack and heart failure



#### **Akebia Therapeutics**

Headquarters: Cincinnati Core business: Novel compounds

for anemia and ischemia-related disorders, particularly peripheral artery disease www.akebia.com

#### ARTERIOCYTE

#### Arteriocyte

Headquarters: Cleveland, Ohio and Hopkinton, Mass.

**Core business:** Application of cell-based therapeutics and tissue engineering to repair damaged heart or vascular tissue www.arteriocyte.com



#### Athersys Headquarters: Cleveland

Core business: Biopharmaceuticals for the treatment of cardiovascular disease and obesity www.athersys.com



Cell Targeting

Headquarters: Cleveland

www.celltargetinginc.com

#### CardioInsight Technologies Headquarters: Cleveland Core business: Noninvasive

technology for mapping cardiac electrical activity to guide the treatment of heart rhythm disorders www.cardioinsight.com

Core business: Technology that utilizes peptide markers

to direct cellular therapies for tissue regeneration

Core business: Pharmaceuticals based on genetic chemistry for the treatment of cardiovascular, metabolic and related disorders www.evolva.com

resonance (MR)-based imaging and interventional technologies with applications for stent deployment, radiofrequency ablation and other image-guided therapies www.i3mri.com



#### **Clear Catheter Systems**

Headquarters: Currently Bend, Ore.; relocating to Cleveland

Core business: Clot-free indwelling large and small drainage catheters for use after cardiac surgery www.clearcatheter.com



## **Cleveland Heart**

Headquarters: North Carolina; establishing operations in Ohio

Core business: Ventricular assist systems for patients with terminal heart failure who are unresponsive to conventional therapies





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#### Evolva

Headquarters: Basel, Switzerland; establishing U.S. operations in Cleveland



#### Interventional Imaging Headquarters: Cleveland

**Core business: Magnetic** 

#### Lipotech

Headquarters: Cleveland Core business: Patented, healthy oil for the food industry with benefits for cardiovascular health

#### Navis Medical

Headquarters: Cleveland Core business: A guide

wire technology for invasive peripheral vascular procedures that improves endovascular navigation and eliminates or reduces the need for multiple catheters and wires

www.navismedical.com



PeriTec Biosciences Headquarters: Cleveland

Core business: Peripheral vascular stents lined with peritoneal tissue for increased longterm patency



## PrognostiX

Headquarters: Cleveland Core business: Molecular biomarkers

such as an enzyme immunoassay for

the diagnosis and treatment of cardiovascular disease www.prognostix.com



### Proxy Biomedical

Headquarters: Galway, Ireland; establishing U.S. operations in Ohio

**Core business:** Synthetic biomaterials development for tissue regeneration and healing *www.proxybiomedical.com* 

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Quality Electrodynamics Headquarters: Mayfield, Ohio Core business: The design and manufacture of magnetic resonance

imaging (MRI) radiofrequency coil products



#### VitalStream Health, Inc. Headquarters: Currently Boston, Mass., relocating to Ohio

**Core business:** Remote monitoring and facilitated care for chronic disease such as a web-based blood pressure monitoring and management system



#### ZIN Medical

Headquarters: Cleveland

Core business: A remote,

wireless patient monitoring system based on technology developed with support from NASA www.zinmedical.com



## Exchanging Information, Expanding Collaboration

Promoting collaboration between academia, the biomedical industry and other Ohio Third Frontier programs is a key strategy to achieving GCIC's goals for economic growth in the State. To educate, build awareness, capitalize on synergies, enhance innovation, and to share best practices, GCIC leads in bringing the various institutions together. Along with providing industry expertise and services to our portfolio companies in areas such as clinical, regulatory, intellectual property and reimbursement strategy, GCIC truly is adding value beyond the financial assistance of our funding programs. Examples include the following:

In collaboration with the Center for Multifunctional Polymer Nanomaterials and Devices (CMPND) and PolymerOhio, GCIC presented an Emerging Technology Forum focused on cardiovascular technology applications of polymers. Breakthrough polymer technologies, such as high-tech coatings, biocompatible and bioactive materials, and nano-engineering were discussed in the context of needs in cardiovascular medicine and solutions from the robust polymer industry throughout the State.

New cardiovascular drug development is a field that will continue to grow and offer significant opportunities. GCIC is uniquely positioned to assist companies in leveraging Ohio's world-class capabilities, such as those of the University of Toledo's Center for Drug Discovery and Development and the University of Cincinnati's Genome Research Institute. GCIC coordinated a mini-summit among the multi-institutional partners to discuss their various capabilities and to strategize how best to take advantage of these statewide resources.

#### The Path to Commercialization

GCIC solicits the guidance of its Commercialization Advisory Board (CAB) to assist in making project funding and commercialization decisions. This independent, third-party committee comprises medical and business leaders from across the country. The venture capital community and leading medical companies, as well as Ohio clinical and academic institutions are all represented on the board. Interaction between companies and the CAB benefits both sides – fledgling companies receive advice and direction from leaders in the field while members of the venture community get an early look at emerging technologies as potential new investments.

### Support for Institutional Research

GCIC Institutional Partners are engaged in groundbreaking biomedical research that lays the foundation for advances in patient care. GCIC supports a wide range of institutional projects encompassing drug development, cellular therapies, polymer and materials science, circulatory support devices and surgical innovation. GCIC aims to cultivate these research developments to move them from laboratory bench to patient bedside and help transform them into thriving businesses.



# Company Spotlight - ACELLERX



AcelleRX Therapeutics is developing a biopharmaceutical with the potential to revolutionize treatment for patients who have suffered a heart attack. Just a year after the company was spun off from Cleveland Clinic it is poised to take the drug into Phase I trials in 2009.



SDF-1 is a protein produced by the body for a few days after a heart attack. Cleveland Clinic cardiologist Marc Penn, MD, PhD, discovered that this small protein attracts stem cells to rebuild damaged heart tissue. Delivering the SDF-1 gene to the area of infarct catalyzes the repair process. The AcelleRX product permits a sustained, longer-term release of SDF-1, leading to substantial new tissue and blood vessel growth and improvements in heart function.

Ultimately, SDF-1 could help a significant portion of the more than 2 million Americans who suffer a heart attack or are diagnosed with congestive heart failure each year. Several early studies also suggest that it could improve function in a wide range of conditions, including stroke, wound healing and certain types of kidney disease.

AcelleRX's initial funding came through a \$750K convertible-debt seed investment

from local investors and a grant from GCIC. Despite a difficult economy, the company closed a \$6.95 million Series A investment in September 2008 - a testimony to its solid beginnings and promising potential.

"GCIC has played a critical role in our development," says CEO Rahul Aras, PhD. "The initial funding was necessary for us to build the team and complete preclinical studies necessary to move our lead product toward human clinical trials - milestones that our Series A investors wanted to see. Beyond the money, GCIC is a valuable resource for advice and networking in the cardiovascular space."

At the close of 2008, AcelleRX was in discussion with the US FDA regarding development plans and transitioning the technology to human clinical trials.





Akebia is a young and growing pharmaceutical company in Cincinnati that is working to develop novel compounds that can safely stimulate new blood vessel growth. Such a product would be a major breakthrough for treating blood vessel or circulatory problems associated with diabetes, hypertension and obesity. It may pave the way for a better quality of life for people with peripheral or coronary artery diseases.

Akebia's founders have a long list of other potential applications for these high-tech compounds, ranging from trauma to burns to lupus. The basis for all of them is the synthesis of the compounds in a form that can be delivered to the patient by an injection under the skin. Through their interactions with a specific enzyme - a phosphatase - these compounds will promote the growth of healthy collateral blood vessels around artery blockages.

Currently, treatment options for peripheral artery disease are limited, and effective medications have not been developed to date. With these limitations, the existing market for peripheral artery disease is in excess of \$700 million, but there is potential for a much larger market - if better treatments become available.

Akebia's founders believe they have the solution. The company licensed several patents on these compounds from Procter & Gamble in 2007. "We are an independent, venture-funded company," explains Robert Shalwitz, MD, Akebia's chief medical officer. "With GCIC funding, we have been able to take these special compounds rapidly through formulation and testing stages specifically for cardiac and peripheral artery disease applications."

GCIC's support has allowed Akebia to move the product through preclinical testing and begin to prepare for human clinical trials. Committed to Ohio's economic development, the company strives to use Ohio companies for all of the related activities, from toxicology to clinical trials to manufacturing and production.









PeriTec Biosciences is focused on developing tissue-lined stents for treating peripheral vascular disease. The potential market for the tiny devices is large - the American Heart Association estimates that 8 to 12 million Americans have peripheral artery disease, and 20 to 30 percent of them eventually require intervention. Characterized by muscle pain during rest or activity, peripheral

artery disease means that a build up of plaque is present in the arteries outside the heart - usually in the legs.



Most patients who need treatment will have stents placed in their arteries to hold the vessels open. Conventional stents, tiny mesh cylinders, can be effective for a while, but in about a third of patients scar tissue accumulates or arterial plaque deposits form in the stent and eventually block the artery again. The PeriTec stent has the potential to significantly reduce this risk and the need for repeated treatment.

The PeriTec stent is lined with peritoneal tissue, the membrane lining the abdominal cavity. The biological makeup of this tissue reduces the amount of

scar tissue formation inside the stent and creates a mechanical barrier that prevents plaque from collecting again on the inside of the stent and creating another blockage in the artery.

availability in the United States is still about five years away, but he is confident that this product will revolutionize the market.

GCIC has provided significant - and essential - financial support to PeriTec at a critical time in the company's development. "GCIC has provided funding to accelerate the engineering around our product," explains Timur Sarac, MD, PeriTec's founder. "GCIC came through with funding to support additional, important engineering developments." PeriTec currently has six employees, including officers and R&D staff.

The R&D department currently is working to enhance the stent delivery system. Dr. Sarac estimates that commercial





Magnetic resonance imaging (MRI) is a familiar and still rapidly growing imaging technology used around the world for diagnosis and treatment monitoring. Using radiofrequency waves and a strong magnetic field, MRI creates clear and detailed pictures of organs and tissues. Cardiac MRI is one of the developing and emerging applications for this imaging technology.

Quality Electrodynamics (QED) engineers and manufactures MRI radiofrequency (RF) coil products for leading equipment manufacturers such as Siemens, Toshiba and General Electric for the worldwide market. The RF coil is an essential piece of hardware in every MRI system that must be designed and manufactured to precision specifications.

QED was founded in 2005 with support from a State of Ohio Third Frontier Grant, industry partners, the US National Institutes of Health and New Energy and Industrial Technology Development Organization of Japan. The company presently has 33 employees in northeast Ohio.

"GCIC's role is very significant in that it enables QED to access the stateof-the-art resources at GCIC and cutting-edge clinical applications being developed at GCIC institutions," says QED CEO Hiroyuki Fujita, PhD.

QED's proprietary technology enables the development of state-of-the-art MRI RF coil products that attract major medical device manufacturers. In November 2008, QED's 1.5-Tesla Head-Neck-Chest Array Coil, engineered and designed for Toshiba Medical Systems, received US FDA 510(k) approval, and QED began shipping the product. It is currently the most advanced commercially available RF coil product to image the head, neck and chest simultaneously. Toshiba introduced this next-generation product at the 2008 Radiology Society of North America Annual Meeting where it was well received.

With GCIC's support, QED is currently finalizing the design of a novel cardiac detector. The company anticipates the cardiac detector - which shares some technology with the Head-Neck-Chest Array Coil - will be commercially available by the end of 2009.







# Economic Development

GCIC's economic development partners provide invaluable assistance and expertise in support of the consortium's business recruiting efforts. Working together with GCIC, the group leverages its combined resources and networks to enhance business attraction, formation and acceleration.

#### The Ohio Department of Development

The Ohio Department of Development (ODOD) supports economic development through a variety of programs aimed to assist developing companies and those relocating to the State. These programs include state grant, investment loan and tax credit programs for eligible companies with growth and economic impact potential. The State aims to:

**Department of** Ohio Development

#### BioOhio

BioOhio is a non-profit organization designed to build and accelerate bioscience industry, research and education in Ohio. BioOhio is focused on networking the distributed bioscience assets of Ohio to promote regional, national, and global best-in-class competitiveness and growth. www.bioohio.com

#### Team NEO

Team Northeast Ohio (Team NEO) is a private sector-led regional economic development organization that facilitates economic development through leveraging the strengths of Northeast Ohio. Based in Cleveland, Team NEO serves as a central resource, informing and serving those considering investment in Northeast Ohio.

www.teamneo.org

#### **BioEnterprise**

Based in Cleveland, BioEnterprise is an acceleration initiative designed to grow healthcare companies and commercialize bioscience technologies. BioEnterprise has active partnerships with Cleveland Clinic, University Hospitals and Case Western Reserve University. Developing companies include emerging medical device, biotech, and healthcare services firms. www.bioenterprise.com

#### Fairfax Renaissance Development Corporation

The Fairfax Renaissance Development Corporation (FRDC) is a nonprofit community development corporation involved in new construction, housing rehabilitation, economic development and community organizing and safety programs. Cleveland's Fairfax neighborhood will be the home of the new GCIC incubator/accelerator facility being developed in partnership with FRDC. www.fairfaxrenaissance.org

Support early-stage capital formation and the development of new products

Build world-class research capacity with commercial relevance

Finance advanced manufacturing technologies to support innovation and greater productivity in existing industries

www.odod.state.oh.us











# **Company Attraction**

# International Outreach

A central location, rich human and technology resources and a favorable business tax structure make Ohio a desirable state for new business location, and attracting new companies to the state is an important element of GCIC's mission. Since October 2007, GCIC has engaged in dialogue with nearly 100 cardiovascular companies from around the world with a potential interest in establishing business operations in Ohio.



As of December 31, 2008, seven companies have made commitments to locate in Ohio as a direct result of GCIC's activities, and another three companies are locating in Ohio as a result of a team effort by GCIC and other economic development organizations.

These 10 represent an interesting geographic mix, including international companies from Brazil, Ireland, the Netherlands, Switzerland, Uruguay, and an additional domestic set from Michigan, North Carolina, Maryland, Massachusetts and Oregon. They vary in size, products, markets, distribution systems and leadership.

What these 10 diverse companies have in common is a desire to grow and thrive. Through GCIC's diligent education effort, they learned about the ease of access to leading clinicians at GCIC's participating institutions, the array of financial and service support available, supply chain efficiency and human resources availability. Ultimately, they chose Ohio.

In 2009, GCIC will continue to cultivate relationships with new ventures and simultaneously ramp up efforts to attract established companies with the potential for more rapid growth.

GCIC forges partnerships with organizations that share a common interest in merging cardiovascular innovation with economic development. Many international companies desire to expand their market presence into the United States, and many discover that Ohio is the place to be. GCIC actively engages with institutions and business development leaders overseas to promote the advantages of establishing businesses in Ohio. International activities occurring over the past year include:



industry. As a result of the conference and meetings with 45 companies, BioJerusalem and the State of Ohio have signed a "Global Partnership Towards Innovation" agreement, the first economic development agreement between the State of Ohio and Jerusalem. The agreement involves more than 30 signatories, including biomedical companies, institutions and economic development agencies representing all regions of Ohio.



**Enterprise Ireland** hosted GCIC and Cleveland Clinic for a joint Innovation Summit. Featuring presentations by three Ohio-based start-up companies and four Cleveland Clinic clinicians, the Summit attracted nearly 100 attendees. GCIC leaders met with Irish business and government leaders to discuss potential partnerships.

At the seventh annual *Biomed Israel Conference* in Tel Aviv, GCIC, its partners, and the cities of Columbus and Beachwood represented the Ohio biotechnology

# Attraction Spotlight - PROXY BIOMEDICAL

# Forging New Links



Proxy Biomedical, headquartered in Galway, Ireland, is a leading innovator in the development and manufacturing of surgical products that apply synthetic biomaterials technology for tissue regeneration. They are part of the \$5 billion worldwide tissue engineering sector, a

leading-edge biotechnology that opens the door to new treatments and improved quality of life for patients.

Through a growing relationship between GCIC and Enterprise Ireland – an Irish economic development agency – a division of Proxy Biomedical will be opening in Ohio in 2009. This US division will accelerate company growth, enhancing sales and customer service in the world's largest healthcare market, the United States.



Proxy Biomedical has developed a novel platform technology based on biologic membranes for tissue regeneration. The tissue engineering biomaterial can

be used independently or in combination with molecules, growth factors, and cytokines that have a favorable impact on cell expansion, differentiation, remodeling and tissue regeneration – with multiple cardiovascular applications.

"Ohio offers a cluster of life science institutions with proven experience in a relatively low cost setting when compared to other clusters," notes Peter Gingras, Proxy Medical Managing Director. "Setting up our US headquarters in Ohio will facilitate market-driven product development through collaborations with key opinion leaders at leading healthcare institutions."



GCIC, along with partners BioOhio, BioEnterprise and Case Western Reserve University each were instrumental in fostering relationships with Proxy that allowed them to choose Ohio as a base for US operations. "GCIC and its partner organizations have taken an active role in promoting corporate growth and innovation for Proxy Biomedical," Gingras says.

Proxy's Ohio location will include design, development, manufacturing, and marketing capabilities – bringing ample job creation and a favorable economic impact to the state of Ohio. Growth potential of up to 50 highly skilled jobs is possible within the operation's first few years. Ohio offers extensive resources in manufacturing, wholesaling, logistics and distribution as well as a network of experienced clinical, regulatory and business strategy experts. GCIC facilitates access to a multitude of resources, every level of the supply chain, and promotes integration and closer relationships throughout to create synergy, competitive advantage and reduce costs for the benefit of GCIC portfolio companies.

As an example, GCIC has established a relationship with Norman Noble, Inc., a Highland Heights-based microprecision manufacturer of medical devices and implants. Possessing one of the largest laser micromachining facilities in the United States, the company's knowledgeable production engineers and fully dedicated Laser Research and Development department are an invaluable resource to assist GCIC companies in manufacturing intricate medical devices.





# **Economic Impact**

Ohio's excellence in biomedical research and development serves as the launching pad for GCIC's efforts in establishing new companies, attracting existing companies to the state and expanding the cardiovascular technology community. Since GCIC's launch in 2007, the consortium has made significant progress toward its goal of creating or attracting 40 companies to Ohio, creating 850 new jobs and assisting existing companies in their growth, making a positive impact on Ohio's economic development that will continue to expand.



GCIC is committed to contributing to economic development through job growth in the State of Ohio. GCIC aims to help create high-paying technical jobs that enable company expansion and growth. Through GCIC support, many portfolio companies have been able to progress and grow. 2008 saw steady growth in job creation each quarter, beginning at 28 in Q1 and reaching 50 in

### **Commercialization Funding**

Category	Round 1 May 2007	Round 2 Dec. 2007	Round July 2
Arrhythmia Management			1
Blood Pressure/Cardiac Performance	2		
Cardiac Assist Devices	1		1
Diagnostic Testing	3		1
Drug Development	3	1	1
Imaging	1	1	
Healthy Diet		1	
Patient / Information Management			2
Patient Monitoring	1		
Regenerative Medicine	5		2
Surgical Products		1	
Valve Products	3		
Vascular Devices	1	2	1

Total	20	6	9
Total*			35

Funding	\$5.28M	\$1.77M	\$3.48/
Total			\$10.53

\* 4 funded projects are extensions of earlier projects

Additionally, several companies and institutions have acquired followon funding. Venture funding, industrial and government support provided a combined \$70M in additional funding to carry on further development of GCIC projects.



3M	
3M	

has provided greater than \$10 million in funding for 31 new development programs under the GCIC Commercialization Funding Program.

# Building the Future of Innovation

# The GCIC Team

GCIC is constructing a new cardiovascular incubator/accelerator building in Cleveland's Fairfax neighborhood. The building is being developed in partnership with the Fairfax Renaissance **Development Corporation.** 



Strategically located near the Cleveland Clinic main campus, Case Western Reserve University and University Hospitals, the incubator will offer 50,000 sq ft of prime, state-of-the-art space. Configured to accommodate the latest technology development, the facility will be open to GCIC member companies at competitively attractive lease rates. Tenants will enjoy customizable laboratory facilities for new product research and development activities, flexible office space and conference rooms and have convenient access to all of GCIC's business support services.

Groundbreaking for the new building took place in early 2009 with completion scheduled for the first quarter of 2010.

#### GCIC CORE TEAM

**Mark Low** Managing Director

**Joseph Barone** Associate Project Manager

Shubhayu Basu, PhD Director, Product Development

Susan Bernat Director, Operations and Finance

#### GCIC BOARD OF DIRECTORS

Steven Nissen, MD, Chairman Chairman, Cardiovascular Medicine Cleveland Clinic

**Chris Coburn** Executive Director, Cleveland Clinic Innovations

Paul DiCorleto, PhD

AstraZeneca Keith Kerman, MD

and Corporate Strategy

Laura Konczos

**Eugene Jung** 

**Jennifer Mate** 

**Adele Gulfo** 

Senior Accountant

Program Coordinator, AFIC

Managing Director Primus Venture Partners

Chairman, Cleveland Clinic Lerner Research Institute

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#### Jeff Gold CEO Sapient Capital Management

**Reggie Groves** Vice President, General Manager Cardiac Rhythm Disease Management

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Steven Gullans, PhD Managing Director Excel Medical Ventures

**Kris Johnson** President Affinity Capital Management

John Liddicoat, MD Vice President and General Manager Structural Heart Disease Medtronic Cardiac Surgery

**Bob More General Partner** Frazier Healthcare Ventures



#### **Judy McAnally** Administrative Secretary

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**Thomas Sudow** Director, Business Development

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John Rice, PhD **Managing Partner** Triathlon Medical Ventures

**Frank Samuel** Independent Director

**Howard Palefsky** Managing Director Montreux Equity Partners

Matt Pollman, MD Consultant Cardiovascular Therapeutics and Diagnostics

John Rice, PhD Founder, Managing Partner Triathlon Medical Ventures

**Immanuel Thangaraj** Managing Director Essex Woodlands Health Ventures

Dennis Wahr, MD President, CEO, Co-Founder Lutonix

Lee Wrubel, MD General Partner, Foundation Medical Partners



## Dear Colleagues,

The Global Cardiovascular Innovation Center is proof that great things are possible when clinical, research and business enterprises pool their energies. In the 18 months since the consortium was actively launched, GCIC has infused Ohio with fresh energy and exciting opportunities as we have pursued our goals of business formation, attraction, expansion and retention.

Each of these business ventures represent a potential advance in the diagnosis and treatment of patients with cardiovascular disease, a breakthrough that will extend a patient's life, improve quality of life or help physicians deliver treatment more efficiently. Fueled by the aging of the population and the rise in chronic diseases that accompanies that demographic shift, patient demand for safer, less invasive treatments, more sophisticated imaging for earlier diagnosis and more effective drug therapies is driving innovations in the field.

GCIC is leveraging this opportunity and partnering with visionary companies - new and established - to take cardiovascular care to the next level through clinically relevant innovations. GCIC represents the perfect pairing of business and patient care objectives - as one prospers, so does the other.

I know that you share my enthusiasm as GCIC builds on the accomplishments of the past 18 months and continues to shape a brighter future for patients, businesses and the great state of Ohio. Thank you for your interest, investment and imagination.



#### Sincerely,

#### Steven Nissen, MD

Chairman, GCIC Board of Directors Chairman, Cardiovascular Medicine, **Cleveland Clinic** 

Our Mission: To be an international leader in developing, acquiring, incubating, and commercializing cardiovascular technology.

# **Global Cardiovascular Innovation Center**

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Bringing High-Impact Cardiovascular Innovations to the Market