

Peter Munk Cardiac Centre

CLINICAL AND RESEARCH REPORT



VOL. 10 NO.2 / WINTER 2015

TED ROGERS CENTRE FOR HEART RESEARCH A 'transformational' gift

RECORD CONTRIBUTION LAUNCHES UNIQUE HEALTH
CARE INITIATIVE TO TACKLE HEART FAILURE

Almost six years to the day of the passing of the legendary Canadian businessman and entrepreneur Ted Rogers, his family made history by announcing a \$130 million gift – the largest philanthropic contribution ever to a Canadian health care initiative – to create the *Ted Rogers Centre for Heart Research*.

Bringing together the combined expertise of the Peter Munk Cardiac Centre at UHN, Sick Kids, and University of Toronto, the primary goal and bold target of the newly created Centre is to reduce hospitalization for heart failure by 50 per cent over the next decade.



History in the making: Martha Rogers, TGWHF Board Member Dr. Bernie Gosevitz, Rogers Communications Board Chair Alan Horn, Loretta Rogers, Dr. Barry Rubin, Medical Director, Peter Munk Cardiac Centre and Edward Rogers at the announcement of a \$130-million gift to create the Ted Rogers Centre for Heart Research.

continued on page 2...

ABOUT THE PETER MUNK CARDIAC CENTRE

The Peter Munk Cardiac Centre is the premier cardiac centre in Canada. Since it opened in 1997, the Centre has saved and improved the lives of cardiac and vascular patients from around the world. Each year, approximately 55,000 patients receive innovative and compassionate care from multidisciplinary teams in the Centre. The Centre trains more cardiologists, cardiovascular surgeons and vascular surgeons than any other hospital in Canada. It is based at the Toronto General Hospital and the Toronto Western Hospital, members of University Health Network, which also includes the Princess Margaret Cancer Centre and Toronto Rehabilitation Institute. All four sites are research hospitals affiliated with the University of Toronto. For more information please visit www.petermunkcardiaccentre.ca



...A 'transforming gift' continued.

The name Ted Rogers is synonymous with innovation and an entrepreneurial spirit. Whether it was pioneering the use of FM radio in 1960, establishing Rogers Communications in 1967, or the countless philanthropic contributions Mr. Rogers made to a wide spectrum of causes over the course of his life, his motivation always had a singular purpose: to improve the everyday lives of Canadians.

"The only thing that you can say is that this is truly transformational," said Dr. Barry Rubin, Chair and Program Medical Director of the Peter Munk Cardiac Centre, at the gift announcement on November 20, 2014, with Ted's widow Loretta, members of the Rogers family, Ontario Minister of Health Eric Hoskins and Toronto Mayor John Tory. Dr. Rubin emphasized the unique vision of this generous gift. "The greatest element of this gift is the ability to bring the three Centres together to leverage their different expertise," he said.

"The size and scope of this contribution is unprecedented," said Health Minister Hoskins. "Medical research of this kind asks us to imagine a better future. It is the bridge between life-threatening and life-changing treatments - or even a cure. In other words, it gives us hope."

The Peter Munk Cardiac Centre will focus on delivery of patient care, with work in new databases, biomarkers for cardiac disease and home-monitoring technologies. The Ted Rogers Centre of Excellence in Heart Function, created through a prior gift from the Rogers Foundation and Loretta Rogers in 2012, is the ideal institution to advance research in this area. The largest of its kind in Canada, the Centre specializes in replacement

strategies for advanced heart failure, including mechanical circulatory support and heart transplantation, and acts as a national referral centre for complex heart conditions.

As it provides care for the most complex patients, the number of national and international Fellows who wish to train and learn at the Peter Munk Cardiac Centre is growing. The Fellowship Program in Advanced Heart Failure is widely regarded as among the largest and best in the world.

Getting things done

"We've been dealing with some challenges with shrinking funding from traditional sources and that can really compromise the world-class research that we can do and the resources that we have available," noted Dr. Heather Ross, Director of the Ted Rogers Centre of Excellence in Heart Function and holder of the Ted Rogers and Family Chair in Heart Function. "A gift of this enormity really allows us to get on and get it done."

In completing the gift's stated objectives, the Hospital for Sick Children will take the lead in the Centre's genomic research, seeking ways to prevent the development of cardiac disease, while the University of Toronto will take the lead on stem-cell technology, with new approaches in cellular and tissue engineering to regenerate various regions of the heart. University of Toronto researchers also hope to increase understanding of how the heart develops, which could aid in finding more effective therapies. The Ted Rogers Centre for Heart Research will be led by Interim Director, Dr. Mansoor Husain,



Loretta Rogers (right) publicly thanked Dr. Heather Ross for her care of the late Ted Rogers.

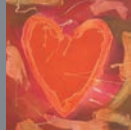
from the Peter Munk Cardiac Centre (see page 4).

Upon Ted Rogers' passing in December, 2008, family members recognized the importance of realizing their patriarch's vision for advancing cardiac care.

"Our father died almost six years ago, we wanted to make a gift in his honour," explained his son, Edward Rogers.

Initial conversations with the partnering institutions commenced three years ago, establishing a framework that would ensure advances could be made with the right expertise, passion and tools in place. With a gift of such potential magnitude, conversations occurred and ideas were passed back and forth on how best to ensure Ted's vision was fulfilled.

Seeking the guidance of Alan Horn, Chairman of Rogers Communications, the goal was to create the philanthropic equivalent to a business plan that would provide the necessary tools, facilities and resources to ensure that clinicians, researchers and



fellows across the three institutions could bring Ted Roger's dream to life. Working together with designated representatives from each institution, a vision slowly came into focus.

"I'm not aware that there is an equivalent Centre in the world to this, where you have such a well-defined and amazingly well-resourced collaboration between a University and two hospitals that deal with the full spectrum of a patient's life," said Dr. Rubin, one of the representatives who worked behind the scenes for nearly three years to secure

the donation and create the Ted Rogers Centre for Heart Research.

Something very meaningful

"The improvements in technology and genomic understanding of heart disease brought on by this gift will bring new options for improving patient care," said Dr. Rubin.

Ted Rogers believed that advances in heart failure could be made with the right expertise, passion and tools.

The creation of the Ted Rogers Centre for Heart Research is an extraordinary tribute to Ted's bold vision and a testimony to the commitment of the Rogers family to realize that vision.

"Our children and I wanted to do something very meaningful in Ted's memory," said Loretta Rogers. "Heart failure took Ted from us when he was 75 years old. In the future, we want fewer Canadians to experience heart failure and to have those who do, live much longer."

For more information about the Ted Rogers Centre for Heart Research, visit www.tedrogersresearch.ca

HEART FAILURE RESEARCH AT THE PETER MUNK CARDIAC CENTRE

At the Peter Munk Cardiac Centre (PMCC), innovations being made in smart technology will strive to reduce heart failure hospitalizations by 50 per cent in 10 years by identifying symptoms before they become problematic, thereby relieving the burden on our healthcare system.

Already, doctors at the Ted Rogers Centre of Excellence in Heart Function are working to leverage leading-edge, home-based health and lifestyle monitoring technologies, which connect to a secure electronic medical record and communication platform.

For example, the Centre has recently completed a pilot study of 100 patients using Bluetooth™-enabled technology to transmit information regarding weight, blood pressure and ECG (electrocardiography) recordings directly from the patient's smartphone to the Heart Function physician's smartphone. In developing a software treatment

algorithm to model patient management, the Centre has used this system to increase patients' knowledge of self-care. This has dramatically improved patient satisfaction and self-awareness of their disease. Tools such as these may allow for earlier discharge from hospital and better management for patients from remote areas within Ontario and other provinces.

"Use of this type of program in sub-populations of patients with recurrent hospitalizations, advanced heart failure, wait-listed for heart transplant or with mechanical circulatory support may better allow us to provide care for patients without mandating relocation to the Greater Toronto Area," explains Dr. Heather Ross, Director of the Ted Rogers Centre of Excellence in Heart Function.

In addition, progress is being made towards developing a virtual environment in the home for patients, where doctors can follow what's happening.

Clinicians will also investigate how the treatment of various diseases such as cancer, diabetes and arthritis impair heart function, and will develop new tools to prevent and treat heart failure. 'First-in-human' clinical trials for novel devices and implants will also drive new standards of care.

"The inherently complex nature of these diseases has a close connection to cardiovascular conditions," says Dr. Michael Farkouh, Chair and Director of the Peter Munk Centre of Excellence in Multinational Clinical Trials. "Their continued sharp growth in this country simply demands a more coordinated, measured and sustainable approach to treatment. As a global leader in cardiovascular care and treatment, we are poised to provide the knowledge and expertise necessary to improve management of heart failure and impart valuable insights to family doctors and other medical staff sitting on the frontlines."



DR. MANSOOR HUSAIN

A whole greater than the sum of its parts

LAYING THE GROUNDWORK FOR A WORLD-CLASS INSTITUTION

“What we need to strive for, right from the start, is to build a spirit and framework of cooperation and teamwork that ensures that the whole is greater than the sum of its parts.”

The ‘parts’ Dr. Mansoor Husain is referring to are University Health Network (UHN), The Hospital for Sick Children (SickKids) and the University of Toronto (UofT) – and the ‘whole’ is the innovative new Ted Rogers Centre for Heart Research, incorporating the Ted Rogers Centre of Excellence in Heart Function at the Peter Munk Cardiac Centre.

As Interim Director of the Ted Rogers Centre for Heart Research, Dr. Husain is tasked with getting things underway or, as he puts it, “building a world class institution from scratch,” something he categorizes as both “the challenge and the opportunity.”

Working closely with the individual organization’s scientific leaders – Dr. Heather Ross of UHN, Drs. Ronald Cohn and Seema Mital of SickKids, and Dr. Peter Zandstra of UofT – Dr. Husain has a number of set objectives in mind, not only for the crucial first 90 days, but to set the tone for the future.

“Naturally, we have to review and refine the stated objectives and aspirational goals outlined in the original funding request,” he says. “But we now must also take a closer look at more granular deliverables and identify more definitely both immediate and long-term milestones.”



Toronto General Research Institute Director and PMCC Cardiologist Dr. Mansoor Husain has been appointed Interim Director of the Ted Rogers Centre for Heart Research.

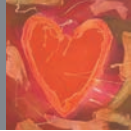
“We want to meaningfully catalyze research activities at the Centre,” Dr. Husain continues. “This means engaging all three partners, and not just from the research perspective, but from multiple perspectives, including science, business, communications, and engagement of champions and groups beyond the Centre’s walls.”

At present, the program’s ability to accelerate such activities is built around two distinct funds: the Innovation Fund and the Education Fund. Dr. Husain has definite ideas for both.

“To be really innovative, we need to collaborate not only with our three internal partners, but with other

institutions,” he notes. “We need to seek the best ideas from around the world and bring them here. We are not going to be a granting agency, but we need to be creative in providing seed funding and attracting other funding for promising research.”

One way to do so may be through research competitions. Perhaps two or three competitions per year, structured to meet the Centre’s unique focus. “Our Review Panel has to be different,” Dr. Husain explains. “It has to include expertise of the highest level, but it also has to be nimble and intuitive – able to recognize ideas both for their scientific excellence and their scalable value to the specific mission of the Centre”.



"I envision something beyond the traditional peer-review approach, something that embraces science, commercialization and the entrepreneurial spirit. We need to be able to say to the scientific community around the world 'here are our mission, values and goals – if you have excellent ideas that fit with these, we are interested in hearing about them. Come and work with us in Toronto'."

Dr. Husain's vision for the Education Fund is equally compelling. "First and foremost we must be proactive from the start," he emphasizes. "The environment is very competitive, and our goal is to attract the best trainees to the Centre who meet our focus – from Canada, the US and around the world. We already have some excellent resources to draw from within our partner organizations and cross-cutting programs, such as the McEwen Centre for Regenerative Medicine and the Congenital Heart Disease Programs at SickKids and UHN. We can build on this."

Dr. Husain also believes the Centre needs to be aggressive in its educational outreach programs, particularly web-based initiatives that reach scientists, clinicians and other critical stakeholders, including the public at large.

"I also strongly support the idea of an annual meeting in Toronto, hosted by the Ted Rogers Centre for Heart Research," he concludes. "The meeting would bring together high-calibre talent, international experts and visionaries who would interact with our staff and trainees, share insights and ideas. It would allow us to learn and grow, and to share our expertise with others."

HEART FAILURE RESEARCH: Q & A WITH DR. MANSOOR HUSAIN

In addition to his role as Interim Director of the Ted Rogers Centre for Heart Research, Dr. Mansoor Husain is Director of the Toronto General Hospital Research Institute and a cardiologist at the Peter Munk Cardiac Centre. With his strong research background, including heart failure, Dr. Husain knows that there is still a lot to learn in this area. Here he answers some key questions.

Q: *Can you tell us a bit about heart failure?*

A: Heart failure is a major health care problem, which some would characterize as an epidemic. There are two basic types of heart failure: systolic, in which the heart does not contract effectively, and diastolic, in which there are problems with the heart's ability to relax.

Systolic heart failure (also known as 'low ejection fraction' heart failure) is usually caused by some type of damage to the working heart muscle, such as a heart attack, an infection of the heart, or the effects of toxic drugs, like some forms of chemotherapy, for example. With diastolic heart failure (*aka* 'preserved ejection fraction' heart failure), the causes are less well understood. The latter is often associated with aging or high blood pressure, but it is just as likely as systolic heart failure to cause problems such as arrhythmias or death.

Q: *Is research needed in both systolic and diastolic heart failure?*

A: Absolutely. There are many unanswered questions in both areas. In low ejection fraction heart failure, for example, why do some people develop viral infections that lead to this, and others do not? We know that some chemotherapy drugs are toxic and cause this problem, but others do not. Why are some people vulnerable to these drugs, while others are not? There are also other curious examples of 'problem drugs'. In other words, it's not just about chemotherapy. We need to look beyond cancer treatments

to other medications in areas like arthritis and diabetes, that have been known to cause or worsen heart failure.

Currently, we pretty much treat systolic and diastolic heart failure patients the same way. We know so little about the mechanisms underlying diastolic heart failure that we are likely missing better, more targeted treatments. Research can help us provide a more focused and personalized approach to treating heart failure in individual patients.

Q: *Will the research be focused on treatment?*

A: Treatment is only one part of the puzzle. We need to consider whether earlier detection and prevention of heart failure is possible. This means deeper enquiry into the underlying causes and precipitants. For example, why is a person alright on Sunday and then sick on Monday? What set off their episode of heart failure? Was it turkey dinner? Did they not exercise enough... or exercise too much? What other environmental factors play a role in this disease? I expect a truly holistic approach will be needed to fully understand and deal with this epidemic.

Q: *Are there any other issues that stand out?*

A: A challenge for us at the PMCC, where we often see some of the most advanced and difficult cases in the country, is that the transformative gift of the Ted Rogers Centre for Heart Research is not all about 'end-stage' heart failure. That is just the tip of the iceberg and, as we know, the tip only represents a small percentage of the actual size. We need to work on better methods of prevention – of reducing the number of patients reaching the end stage that we typically deal with. This will mean advocacy and working with governments and other stakeholders that have the common vision of keeping Canadians healthy. We can only meet the challenge of heart failure if we achieve those levels of participation and knowledge translation.

ADVANCED HEART FAILURE

A new lease on life

NOVEL DEVICE OFFERS NEW HOPE TO PATIENTS

On the fourth floor of the Peter Munk Cardiac Centre, Gail Power takes great pleasure in watching the smile return to the face of Robert, her husband of 44 years. Especially since it was only a few short months ago that Robert's chances for survival looked bleak.

"Life was not worth living," says Robert, recalling the daily struggles he coped with as his heart function deteriorated. "I had no energy at all. It was an effort to move, I had no appetite, and all I did was sleep." Robert's heart condition prevented him from spending quality time with the people he loved.

"I could not play with my grandkids or help out friends with household projects," he recalls. "My heart condition deteriorated to a point where I had difficulty with simple tasks such as dressing and taking care of myself." Robert suffered from arrhythmia, a common condition whereby the heart can beat too fast, too slow, or with an irregular rhythm. In 2006, to help control his arrhythmia, doctors treated Robert with a device called an implantable cardioverter defibrillator (ICD). Similar to a pacemaker, ICDs are used to control abnormal heart rhythms, but also have the additional advantage of issuing high-energy electrical pulses to treat certain dangerous arrhythmias.

"The ICD worked for a long time," says Robert. "But as my heart condition worsened, the ICD began to fail."

In the fall of 2014, Robert's heart function had regressed to what doctors termed as 'advanced', or Stage D heart failure. In this state, conventional heart therapies and symptom management strategies that Robert had undergone no longer worked – his failing heart could no longer meet the needs of his body.

As Robert's condition worsened, he was eventually referred to the Ted Rogers Centre of Excellence in Heart Function at the Peter Munk Cardiac Centre.

First in Canada

On October 31st, 2014, a surgical team led by Dr. Vivek Rao, Chief Cardiovascular Surgeon at the PMCC, successfully implanted a novel mechanical device, the HeartMate™ III, into Robert's heart. The surgery was part of a first-in-Canada clinical trial for this new technology. Manufactured by Thoratec, a leader in the field of left ventricular assist devices (LVAD), the HeartMate™ III is the most advanced technology currently available in mechanical circulatory support.

"We are honoured to be the first and only site in Canada to take part in this clinical trial," says Dr. Rao. "Robert's options were rapidly running out and given the increasingly weak state of his health, a transplant was simply not an option. Having this type of assist device available to support the pumping of blood from Robert's heart was really his only lifeline."

Known as a 'heart pump,' the HeartMate™ III is implanted near the heart and is specifically designed to replicate the pumping action of a heart that is too fragile to pump on its own. The LVAD replaces the failing heart's left ventricle, which circulates oxygen-rich blood throughout the body.

For a high-risk patient like Robert, it meant less invasive surgical implantation, reduced blood trauma and better portability with an active lifestyle.



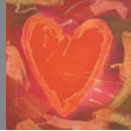
Robert Power, Canada's first recipient of a HeartMate™ III mechanical heart device, with his wife, Gail.

"The device takes some time getting used to," explains Robert. "I know the healing process takes time, but I'm feeling better each and every day. I have hope again."

Further to Robert's procedure, Dr. Rao and his surgical team have successfully implanted two more HeartMate III™ devices, completing the Canadian clinical trial. As Dr. Rao explains, results have been positive.

"Compared to past models, this is a smaller, more reliable device, and it should prove to be a more durable device," he says. "Because of greater clearances in the pump housing, we are witnessing a better handling of the blood flow. We anticipate that the adverse complications sometimes observed with older models such as bleeding, stroke and infections will be reduced or eliminated."

For Gail, the advantages of Robert's new heart pump have been immediate. "There really wasn't much of anything that Robert could do anymore," says Gail. "I've seen a big change in him in such a short time. And he smiles a lot more now."



ADVANCED CARE NURSING

Managing heart failure from hospital to home

NEW CENTRE TO EMPHASIZE ROLE OF NURSES

The Ted Rogers Comprehensive Cardiac Function Program will optimize outcomes, improve quality of life and reduce re-admissions to hospital for patients with heart failure – and nursing will play a leading role in achieving this goal.

“One of the primary goals is to reduce hospitalization – both admissions and re-admissions – for heart failure by 50 per cent in the next decade,” says Linda Flockhart, Clinical Director, Peter Munk Cardiac Centre (PMCC). “Advance practice nurses can help make that happen.”

Linda Belford, Practice Leader at the PMCC, is one of those Advance Practice Nurses. Along with Corrine McCurdy and Jane McIver, Linda will play a leading role in helping to develop the heart failure program. “Corrine works mainly with patients being assessed or listed for cardiac transplant, and Jane with patients who have received LVADS – left ventricular mechanical assist

devices,” Linda explains. “My role is 50 per cent administrative and 50 per cent clinical, including being directly involved in the innovative Rapid Heart Failure clinic, which helps to get patients the appropriate assessment and treatment they need quickly.”

“The Nurse Practitioner (NP) role is well embedded at the Peter Munk Cardiac Centre,” she notes. “In fact, we have pioneered NP-driven models of care in both medical and surgical cardiac care.”

“There are many complexities in managing patients with heart failure, and our role is to co-manage patients with the clinical team, with an emphasis on holistic support to optimize patient self-care management,” Linda continues.

Obviously, such an approach requires not only clinical expertise, but also the appropriate nursing resources and leadership. The Ted Rogers Comprehensive Cardiac Function

Program is committed to providing these. The Program includes two new professorships in cardiovascular nursing to help fulfil the vision.

The Ted Rogers Heart Function Nursing Professors will provide both clinical and research resources aimed at supporting, enhancing and expanding the role of nursing in heart failure management, not only within the in-hospital team but with patients, their families and their health care providers in the community. This will include the integration of state-of-the-art home-based health and lifestyle monitoring technologies.

The vision is a model of integrated care that leads provincial and national efforts to study and optimize heart failure care delivery. With nursing playing a key role, the Program will work to develop, evaluate and constantly improve multidisciplinary models of cardiac care.

PETER MUNK CARDIAC CENTRE - CLINICAL & RESEARCH REPORT

Editorial Advisory Board

Dr. Vladimir Dzavik

Interim Head, Division of Cardiology
Brompton Funds Professor in Interventional Cardiology

Dr. John Floras

Director, Cardiology Research
Canada Research Chair in Integrative Cardiovascular Biology

Dr. Thomas Lindsay

Head, Division of Vascular Surgery
R. Fraser Elliott Chair in Vascular Surgery

Dr. Vivek Rao

Head, Division of Cardiovascular Surgery
PMCC Chair in Advanced Cardiac Therapeutics

Dr. Barry Rubin

Chair and Program Medical Director, Peter Munk Cardiac Centre

Acknowledgements

Linda Belford
Dr. Michael Farkouh
Linda Flockhart
Dr. Mansoor Husain
Dr. Paul Oh
Dr. Narinder Paul
Dr. Vivek Rao
Dr. Heather Ross
Dr. Barry Rubin

The content of this newsletter is for information purposes only. It is not intended to represent or replace the advice of your health professional.

In the news

PMCC symposium advances communication and knowledge transfer

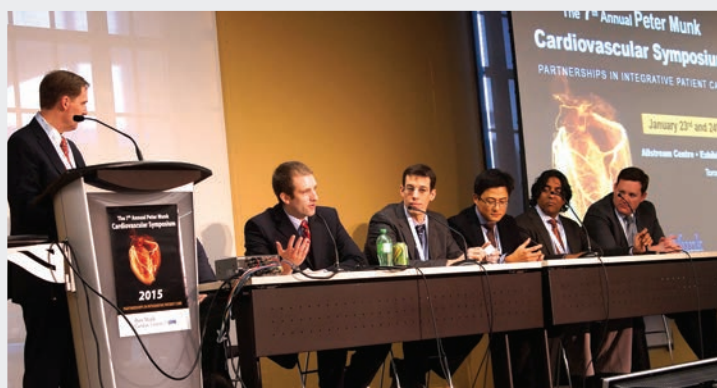
More than 300 family doctors from across the Greater Toronto Area and beyond took part in the 7th Annual *Peter Munk Cardiovascular Symposium* held at the AllStream Centre, Toronto in January 2015.

A two-day event, the Symposium was led by physicians, clinicians and allied health staff from the Peter Munk Cardiac Centre (PMCC) and covered a broad spectrum of topics, including: Inherited Sudden Death Syndromes, Knowledge for the Clinician, Heart Failure, Vascular Surgery and Intervention, Innovation, Imaging and Cardiovascular Rehabilitation.

The annual Symposium aims to advance communication of treatment strategies, innovative procedures and patient outcomes between medical professionals working in the community and cardiovascular specialists at the PMCC. It presents an ideal platform for family physicians to engage in conversation and debate, ask questions, discuss case studies, and seek common solutions.

"We realize that sometimes there is an interruption in communication and knowledge involving what actually happens to a patient," says Dr. Narinder Paul, one of the Symposium's Program Directors. "We felt that we could better contribute to enhanced patient care by having this integration of communication between the family doctor and the specialist who is caring for the patient. We want to develop partnerships between the community and the Peter Munk Cardiac Centre to update family doctors in the latest treatments for these patients."

New to the Symposium this year was an extra half-day session on Cardiac Rehabilitation, increasingly being recognized as an integral component to the PMCC program. Chaired by Dr. Paul Oh, Medical



Surgeons, physicians and allied health professionals from the Peter Munk Cardiac Centre shared their expertise with family physicians at the 7th Annual *Peter Munk Cardiovascular Symposium*.

Director and GoodLife Chair in Cardiovascular Rehabilitation and Prevention at the Centre, the half-day session included presentations on exercise interventions in a variety of patient populations, promoting heart health and identifying ways to make cardiac rehab more effective for people who are recovering from various forms of heart disease and/or surgery.

"We're very proud of the unique, inter-professional, collaborative relationships we have at the Centre," says Dr. Paul. "We often talk about a multidisciplinary model of care that our physicians employ, whereby cardiac surgeons, vascular surgeons, cardiologists, and radiologists all work together to benefit the patient. The Symposium is an opportunity for a broader audience to witness first-hand how we do this."

For more information, please visit

www.petermunkcardiaccentre.ca

To support the PMCC through a donation, please visit www.inaheartbeat.ca or call 416-340-4056

Thank you – our donors – for your continued support of the Peter Munk Cardiac Centre.

Peter Munk
Cardiac Centre  **UHN**