



North Shore
Heart Research
Foundation

Annual Report 2010

Giving  to future generations

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Cardiovascular disease affects more than 3.7 million Australians – that is, one in five individuals and two out of three families.¹ It kills an Australian every 10 minutes.²

1 ABS. National Health Survey 2007-2008 and National Heart Foundation
2 NSW Department of Health Website.

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Front page: Dr Gemma Figtree and Professor Helge Rasmussen
Copy by North Shore Heart Research Foundation
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On 16 May 2004, Foundation Ambassador Chris Russell fell from a boat into cold water on the Hawkesbury River, triggering a complete blockage of his main right coronary artery. He was dangerously distant from available transport to a hospital, let alone a catheterisation laboratory. Yet within 30 minutes he was being assessed at Akuna Bay by paramedics from one of the new ETAMI (Early Triage of Acute Myocardial Infarction) trained and equipped ambulance units.

The Foundation-funded ETAMI research program has decreased the time from onset of chest pains to inserting a stent from 240 to 125 minutes. The potential for heart muscle scarring has been markedly reduced, which is why researchers believe fewer patients are dying.

'Thanks to the speedy response that is possible with the ETAMI procedure developed by Foundation-supported researchers, I not only lived to tell the story after suffering a heart attack a dangerously long way from a hospital, but avoided the debilitating effects of extended damage to heart tissue. Five years after my heart attack, there wasn't a blip on the screen when I ran my annual stress test.'

*Chris Russell
Judge, ABC TV New Inventors; North Shore Heart
Research Foundation Ambassador*



*Chairman Ray Knight
(left) and CEO Derek Minett*

Message from Chairman and CEO

Welcome to the 2010 annual report as we move into our 25th year of supporting internationally recognised researchers in the fight to beat heart disease. Heart disease kills more people than any other disease. It remains the world's biggest killer and cause of disability for men and women. Thirty four percent of all deaths¹ in Australia can be attributed to heart disease and a little known fact is that it kills more than four times as many women as breast cancer². Through Foundation-supported research programs, we are making extraordinary advances in its prevention, diagnosis and treatment. However, rising levels of obesity and diabetes in adults and children make the need for breakthroughs even more pressing.

It is exciting to think that the Foundation-funded research program, which includes grants for projects, specialist equipment and PhD scholarships, is expanding even further. Our support this year totals \$1.7 million and our long-term financial commitment to heart research until 2012 has increased from \$3.5 million to \$4.2 million.

Together we can beat heart disease

Our family of supporters is the Foundation's life blood; they understand that the support they give to our researchers can literally change people's lives, bringing health, hope and improved quality of life to so many. It also brings ongoing benefit to the community through reduced hospital stays, less time off work, and less physical and emotional trauma for family and friends.

There are many ways to make a difference, including making a bequest to the Foundation in your Will. Many more of our supporters are choosing to do this and, with an estimated \$7 million currently committed, bequests now constitute a significant source of funding for the Foundation.

Working with our community

This year we have engaged with the community in several new ways. An exciting new partnership with Northern Suburbs Rugby Football Club helps us take the message to a younger, more diverse section of the community. At the same time, it helps create healthy role models in sport.

We have forged important new relationships with community figures such as ABC TV New Inventors identity and heart-attack survivor Chris Russell. As the Foundation's ambassador, Chris is taking our message to a much wider audience in the community and corporate world.

Our team

In the past 24 years, the Foundation has been able to commit close to \$20 million to heart research. We could not have done this without the generous contributions of our supporters, as well as the hard work of our dedicated team of staff and volunteers. Our operational success also benefits from the calibre of our Board members, who comprise some of the best corporate and scientific minds in Australia.

The brilliance of the researchers we fund, most of whom are practising clinical cardiologists, puts them in the best position to immediately translate their discoveries 'on the bench' into benefits for patients 'at the bedside'. The benefit of their work goes far beyond Australia, as their work so often extends and inspires the international body of knowledge about the human heart.

Throughout this annual report, we present to you the highlights and stellar moments of our year, with reports on how we are working together towards better heart health for all.

Ray Knight
Chairman

Derek Minett
Chief Executive Officer

¹ ABS Causes of Death 2007

² <http://www.heartresearch.com.au/Facts-and-figures.html#Womenandheartdisease>

This year, the Foundation announced funding for four new research grants, increasing our financial commitment to heart research from \$3.5 to \$4.2 million to 2012.

Our highlights

JULY 2009

Results from **Dr Thomas Buckley's** and **Professor Geoffrey Tofler's CARBER study** were published in the *Internal Medicine Journal* of the Royal Australasian College of Physicians in 2009. CARBER (Cardiovascular Risks of Bereavement) is the first study to look in detail at the physical changes people experience immediately after losing a loved one. The findings showed that bereavement can put people at greater risk of heart attack and point to preventative measures that can be taken.

SEPTEMBER 2009

One hundred and twenty guests attended our sixth **Women's Heart Lunch**, organised by the Red & White Committee (right). Guest speaker **Patrice Newell**, a bio-dynamic farmer and food columnist, talked about how moving from city to farm brought her happiness and a new way of life.



NOVEMBER 2009

An enthusiastic audience asked questions and tried out different types of exercise at our second heart health forum, **Be fit for life**, held in conjunction with the North Shore Cardiovascular Education Centre.



OCTOBER 2009

The research work of **Professor Helge Rasmussen** and **Dr Ravinay Bhindi**, seed funded by the Foundation, was recognised with significant grants by the National Health and Medical Research Council.

APRIL 2010

Dr John Gunning was awarded an AM (Member of the Order of Australia) for his services to medicine and contributions to the community through a range of professional organisations. Dr Gunning is Head of Cardiology at Royal North Shore Hospital and the Foundation's Deputy Chairman and Research Advisory Committee Chairman.



The Office of Science and Medical Research awarded a Life Sciences Award to **Dr Ravinay Bhindi** in recognition of his contribution to research.



FEBRUARY 2010

We welcomed two new members to the North Shore Heart Research Foundation Board – Royal North Shore Hospital cardiologists and researchers **Dr Gemma Figtree** and **Dr Ravinay Bhindi**.

MAY 2010

Professor Geoffrey Tofler and **Chairman Ray Knight** unveiled the Foundation's 2009 Honours Board at a special benefactors' morning tea at the Kolling Building, Royal North Shore Hospital. The occasion was to acknowledge and thank the 158 individuals and organisations who gave \$1,000 or more to heart research in the 2009 calendar year (see details on inside back cover).

Our wonderful family of supporters continued to rally to our fundraising **appeals and lotteries**, ensuring we posted record results for the fifth year in a row. Our 2009/10 summer appeal (stem cell research) and 2010 winter appeal (bypass research) together raised \$548,663. Income from our four lottery promotions was \$512,912.

About us

Who we are

North Shore Heart Research Foundation raises funds for research that aims to identify new and better ways to diagnose, treat and prevent heart disease – Australia's number one killer. The Foundation depends entirely on the support of the community, including individuals, community groups, trusts and foundations, and corporate organisations. This support takes many forms – from donations to in-kind gifts, from volunteering to sponsorship.

What we fund

Our goal is to reduce the devastating impact of the disease on the community.

Our priority is to give seed funding so researchers can investigate innovative ideas, often derived from their clinical experience as cardiologists. This preliminary support puts them in a competitive position to apply for more significant funding from national funding bodies such as the National Health and Medical Research Council.

Academic chairs of cardiology

The Foundation also funds two academic chairs of cardiology in association with the University of Sydney, as well as specialist support staff for these positions.

Chair of Cardiology:

held by Professor Helge Rasmussen.

Chair of Preventative Cardiology:

held by Professor Geoffrey Tofler.



North Shore Cardiovascular Education Centre (NSCEC)

The North Shore Cardiovascular Education centre continues to be a nationally-recognised leader in cardiac rehabilitation services. Its primary aim is to assist people in their recovery following a cardiac event. Funding by the North Shore Heart Research Foundation assists the NSCEC in providing these essential services. The centre comprises a multi-disciplinary team that works closely with allied health, general practitioners, cardiologists and other health professionals.

The NSCEC contributes to research projects investigating some of the most significant risk factors for heart disease:

The Healthy Eating, Exercise and Lifestyle Program (HEELP):

This is a group-based, collaborative, randomised control trial designed to help people with cardiovascular disease and type II diabetes achieve and maintain weight loss. The study is currently looking at testing the program's feasibility in a rural setting.

CHOICE (Choice of Health Options in prevention of Cardiovascular Events):

CHOICE is a multi-centre randomised controlled trial, which seeks to lower the risk of future heart attacks through providing personal choice on different ways to lower risk.

Smoking behaviour: In 2010 the centre participated in an evaluation of smoking behaviour after admission for cardiac events, and the likelihood of stopping smoking.

Alternative service delivery options:

The centre is exploring solutions to address the current under-utilisation of cardiac rehabilitation services. Phone follow-up of patients following their discharge is proving to be a valuable service for those who are unable to attend sessions at Royal North Shore Hospital.

Supporters at a recent
Foundation event



Giving heart to future generations

When findings from heart research are thoughtfully analysed by great minds and implemented, lives can be saved and protected from on-going disability.

All Foundation-funded senior researchers are practising clinical cardiologists, which puts them in the best position to immediately translate their discoveries 'on the bench' into benefits for patients 'at the bedside'. The breakthroughs they make contribute to and expand our understanding of the heart and benefit future cardiac research worldwide. In the last year, Cardiology Department researchers had more than twenty papers published in peer reviewed, high impact international journals. The broader community benefits in many ways including less pressure on the hospital system, decreased loss of productivity, decreased rates of disability from heart attack, and less traumatic disruption and emotional upheaval for family and friends.

Many of our researchers work within international collaborative networks that bring unexpected benefits to other areas. An example is Professor Helge Rasmussen and his team, who are currently exploring the regulation of a molecule within the heart's sodium pump cells. The sodium pump cells are fundamental to the contraction and relaxation of heart muscle. The team has identified the previously unknown role of a particular protein in this process, and the part it plays in oxidative stress within these cells.

A variation of this protein (FXD3) is found in great abundance within some cancer cells, including prostate, breast and large intestine cancers. It is thought that a modified protein derived from FXD3 may be used to enhance the effects of radiotherapy and chemotherapy. In this way, research primarily initiated to address issues of heart function may bring benefit to cancer patients around the world.

Creating best practice for life-giving outcomes

An outstanding example of the long-term benefits created through Foundation-funded research is the ETAMI (Early Triage of Acute Myocardial Infarction) procedure for heart attack victims. Using the ETAMI model, patients can be assessed and triaged in the ambulance, using ECG diagnoses transmitted via mobile phone technology.

ETAMI saves significant time (more than 100 minutes) from incident to treatment, saving heart muscle from irreversible damage. For every minute a heart attack continues, more and more heart muscle is dying. Once gone, it can't be revived or replaced, leading to disability and loss of quality of life. The program has dramatically cut heart-attack mortality rates from 30 to 2% at Royal North Shore Hospital and is now used as a model of best-practice around Australia.

Seeding hope for the future

The Foundation continues to provide seed funding for researchers to test innovative ideas before seeking larger competitive grants from government funding bodies. This year the foundation gave \$1.7 million to support heart research. In this way, the Foundation plays an enormously important role in funding research that otherwise may have remained just an idea in someone's note book.

We are proud to report that this year the work of Professor Helge Rasmussen and Dr Ravinay Bhindi, has been recognised with \$800,000 in National Health and Medical Research Council grants. It is unusual for one institution to attract this level of funding and we congratulate them on their achievements.

The Foundation provides scholarships for PhD students whose research work is supervised by our leading cardiac researchers. In this way, we play an integral role in nurturing and developing some of Australia's most promising heart health scientists.

We were saddened by the passing on 10 July 2010 of **Mrs Dorothy Cornock**, one of the Foundation's most significant benefactors. Dorothy's commitment to heart research was most evident in her and her late husband Harold's long-time support for the work of neonatologist Dr Martin Kluckow. Over recent years, he has led a series of world-first studies looking at the best way to manage heart complications in very premature babies.



'It is a privilege to have the opportunity to hopefully discover new ways to treat patients with heart disease, or ideally to prevent disease. I am particularly grateful to those patients who agree to participate in research, usually with no individual expectation of benefit, but more for the common benefit of our society.'

Professor Geoffrey Tofler



Our research program

Through our research program, the Foundation is pioneering ways to diagnose, treat and prevent heart disease. Profiled on the following pages are the research projects and scholarships funded in 2010.

Your support brings health and hope

The Department of Cardiology gratefully acknowledges the funding provided by the North Shore Heart Research Foundation to continue to expand its research activities into heart disease.

One exciting collaborative clinical project seed-funded by the Foundation and spearheaded by **Dr Ravinay Bhindi**, is to perform aortic valve replacement via catheter, thus avoiding open-heart surgery for high risk patients.

Professor Geoffrey Tofler's investigation into triggering events of heart attacks has led to recognition of the relationship of events such as bereavement and heart attack risk, and is revealing important insights into prevention.

Dr Gemma Figtree has led the development of cardiac magnetic resonance imaging into the clinical service as well as basic research. Her study on the cardiac effects of recreational cocaine use has the potential to educate and prevent heart attacks in this group.

Professor Stephen Hunyor leads a multi-skilled team working at the forefront of translational research. Their world-class facility is focussed on stem cell therapies for repairing diseased heart tissue.

The Office of Science and Medical Research has awarded a Life Sciences Award to Dr Ravinay Bhindi in recognition of his research.

In the last year, Cardiology Department researchers have had published more than 20 papers in peer-reviewed, high-impact international journals. Their achievements would not have been possible without your donations which foster the aims of the North Shore Heart Research Foundation.

Dr John Gunning
Head of Cardiology, Royal North Shore Hospital;
Foundation Vice Chairman



Rising stars push the boundaries

I am often inspired by the calibre of the young researchers who are funded by the Foundation. These outstanding young scientists make a unique contribution to reducing heart disease. With this in mind, I would like to highlight some of their work.

Dr Tom Buckley is building on his previous work in a follow-up study into why family bereavement, especially within the first six months, is linked to a rise in heart attack risk.

Dr Keyvan Karimi Galougahi is investigating how the function of the sodium pump in heart muscle is altered in diabetes and heart failure. His work may lead to a reduction in death and disability associated with these diseases.

Dr Chia Chi Liu is investigating the effects of insulin on control of the sodium pump. In particular, she is studying how insulin may protect the sodium pump against the harmful effects of oxidative stress.

Brad McEwen for his PhD is focussed on how omega 3 fatty acids may protect against heart disease. Using a variety of novel techniques, he is investigating the effects on blood platelet function and clotting.

Jason Seow is studying how the damaged heart can be repaired, using bone marrow and stem cells, and particular growth factors that can influence healing. His study takes advantage of the important MRI research-scanning availability on campus.

Dr Levi Bassin's research is exploring ways the body's electrical system can be influenced by conditions such as stroke and hypothermia, with reduced body temperature.

There is a great spirit of cooperation among the different research groups, which is facilitated by the Kolling Research Building as well as new equipment made available through support from the Foundation. The collaborative work of these talented individuals is an example of how Foundation-funded researchers bridge the gap between research and improved patient care.

On behalf of all the researchers, thank you for your ongoing support. We look forward to sharing new findings with you, and to see the research result in improved care for patients with heart disease or to prevent disease in those at increased risk.



Professor Geoffrey Tofler
Head, Preventative Cardiology and Epidemiology,
Royal North Shore Hospital; Chair, Preventative
Cardiology, University of Sydney; Foundation
Honorary Medical Director.

Prevention

TARP 2 – Preventing heart attacks triggered by stressors

This study looks at the role of severe emotional and physical stress, eating a heavy meal, or respiratory infection, as potential triggers of heart attack in people at increased risk. Different strategies are being tested, including taking single doses of prescribed medicine such as aspirin and beta-blockers, as possible preventative treatments. Primarily a study of feasibility, the findings may re-shape preventive strategies for heart disease and stroke. Preliminary results with healthy patients were encouraging. The study is now examining the feasibility of this strategy with higher risk patients to identify potential triggering activities and take appropriate medication which may be protective. Results suggest similarly effective results with this group as with the healthy group. Professor Tofler's research team has recently completed a chapter on triggering of heart disease and its prevention for an international textbook on Stress and Heart Disease.

Project title: Triggered Acute Risk Prevention (TARP2): a study of feasibility in subjects with cardiovascular risk factors

Funded since: 2008

Investigators: Professor Geoffrey Tofler, Dr Tom Buckley, Ms Monica Spinaze, Dr Elizabeth Shaw, Dr Michael Ward

CARBER 2 – Bereavement and heart health

Bereavement is associated with increased risk of heart attack, particularly in the early stages, although reasons for the risk have not been well explained. Initial findings of this world-leading research project have shown temporary changes in stress hormones, immune function, clotting, heart rate and blood pressure, biological responses associated with increased risk of heart disease. This study is examining possible preventative strategies to reduce cardiovascular risk in the early weeks of bereavement. Over the past 12 months the focus has been on the logistics of conducting the study, which involves collaboration and coordination between all hospital departments involved including social work, Chaplaincy, intensive care, emergency department, and cardiology. In addition, we have continued to publish findings from the CARBER 1 study and have several manuscripts under review. Findings from the study as presented at the

2009 Cardiac Society of Australia and New Zealand were featured on ABC TV news and ABC Radio National.

Investigators: Professor Geoffrey Tofler, Dr Thomas Buckley, Associate Professor Roger Bartrop, Associate Professor Christopher Ward, Professor Sharon McKinley, Dr Anastasia Susie Mihailidou, Ms Monica Spinaze, Dr Marie-Christie Morel-Kopp, Ms Margaret Bramwell, Ms Jennifer Havyatt, Ms Dianne Roche, Ms Angela Stannard, Mr Walther Chen, Professor Christopher Tennant, Ms Kerrie Goldston

Diagnosis

Cardiac magnetic resonance imaging

Magnetic resonance (MR) imaging is a non-invasive procedure that has revolutionised the diagnosis and treatment of many conditions. However its application for the heart (CMR) is still evolving, specifically as the heart is a moving entity. The study is developing the use of CMR to examine heart injury subsequent to cocaine use, a prevalent issue in our society. The study has published CMR data demonstrating the devastating effects of cocaine-induced thrombosis with subsequent large heart attacks in young, healthy individuals immediately after cocaine use. It is hoped this will create awareness in the community most affected by cocaine, and may reduce its use.

Title: Cardiac Magnetic Resonance Imaging (CMRI) Research Facility

Funded since: 2008

Investigators: Dr Gemma Figtree, Dr Stuart Grieve, J McCrohon, Dr Christopher Choong, Professor Stephen Hunyor, Associate Professor Leonard Kritharides, Dr Raj Puranik, Professor Helge Rasmussen, Dr Michael Ward.

Understanding tako-tsubo cardiomyopathy

Tako-tsubo cardiomyopathy (TTC) is a common condition, especially among women. After a significant emotional stressor, patients have chest pain and ECG abnormalities suggestive of heart attack. TTC is poorly understood and has been linked to the effects of estrogen on adrenergic responsiveness. This study aims to identify genetic variants in estrogen and adrenergic signalling which may alter the body's response to stress. Findings may increase our understanding of TTC as well as the regulation of the coronary microcirculation and its response to stress. The study is expected to be completed within the next 12 months.

Project title: Candidate genes for Tako-tsubo cardiomyopathy

Funded since: 2008

Investigators: Dr Michael Ward, Dr Gemma Figtree, Associate Professor Chris Semsarian

'Anywhere else, ETAMI might have stayed in someone's notebook. But at Royal North Shore Hospital and thanks to the support of the Foundation, ETAMI could be trialled, perfected and now, given international recognition.'

Dr Gregory Nelson, Director of Interventional Cardiology, Department of Cardiology, Royal North Shore Hospital.

Treatment

Damaged hearts renewed with the patient's own stem cells enhanced for survival

Novel ways to strengthen a damaged heart are being explored. The patient's own bone marrow is the source of stem cells that are conditioned using advanced genetic techniques. When placed in the heart, such cells have been shown to stimulate growth of new muscle and blood vessels. The revolution occurring in the fields of regenerative medicine, stem cell therapy and translational medicine has excited the fields of basic research and clinical medicine.

The investigators are working in collaboration with colleagues at the State University of San Diego and several groups in the Kolling Institute. They have developed models that allow them to mimic the human situation of heart damage such as after heart attack, and the tools to apply therapies in the clinical setting. Sensitive measures are used to assess the degree of damage and benefits from the treatment. One point of current emphasis is the tricky issue of getting the stem cells into the damaged area of the heart in sufficient numbers – which can be particularly challenging in what is potentially a hostile environment after heart attack.

Project title: Efficacy of genetically engineered mesenchymal stem cells (MSC) for regeneration of the post-infarct heart – assessed by cardiac magnetic imaging (MRI)

Funded since: 2009

Investigators: Professor Stephen Hunyor, Professor Mark Sussman (State University of San Diego, USA)

Improving heart function in pre-term babies

Neonatologist Martin Kluckow is conducting a series of ongoing trials to investigate the best way to manage a heart complication called patent ductus arteriosus, which can cause lung damage and brain bleeding in pre-term infants. The study is based at the Newborn Care Centre at Royal North Shore Hospital and has enrolled over 150 infants born more than 10 weeks early.

Project title: Cardiac function in premature infants
Funded since: 1997 (through recurring funding from the Mill House Foundation)

Investigator: Associate Professor Martin Kluckow

Hormone treatments for heart disease

For healthy functioning, heart cells need low levels of sodium inside, and high levels of potassium outside. Normal heart cells are able to pump sodium out – via the sodium pump, which is in the membrane of a heart cell. However,

little is known about how the body controls and regulates the sodium pump, in health or disease. The study identified the manner in which insulin can regulate the function of the sodium pump, and the findings may be useful in developing effective treatments for cardiovascular disease. The next phase of our research focuses on the development of treatments incorporating the regulation of sodium pump function to limit damage to heart tissue.

Title: Molecular mechanism of insulin-induced Na⁺-K⁺ pump stimulation in cardiac myocytes

Funded since: 01 Jan 2010

Investigators: Dr Chia Chi Liu, Dr. Gemma Figtree, Prof. Helge Rasmussen

Remote monitoring of heart rhythms and devices

Remote monitoring systems are now widely used in the management of patients with rhythm disorders and implanted devices such as pacemakers. The internet-based systems are now considered 'Standard of Care' internationally and assist in the continuous improvement of patient follow-up programs at the Cardiac Rhythm Management Research Unit at Royal North Shore. A new database established in the unit in 2009 will enable closer quantitative management of follow-up, as well as provide feedback on device performance over time. A novel smart phone system (developed in conjunction with the Faculty of Engineering and IT at the University of Technology Sydney) was successfully trialed in patients at Royal North Shore Hospital and drew great interest when presented at international forums recently. Plans are in place to extend the program to patients taking part in cardiac rehabilitation programs. It is hoped that adherence to treatment programs and outcomes from rehabilitation may be improved using the system, at low cost and using widely available technologies.

Project title: Remote rhythm monitoring – CRM Research Unit
Funded since: 2008

Investigators: Dr Edward Barin, Dr Peter Leijdekkers, Professor Valerie Gay, Professor Elaine Lawrence

Ninety per cent of Australians have at least one modifiable risk factor for heart disease, and 16% have four or more risk factors*. The main risks are: being overweight, family history, age, hypertension, diabetes, smoking, high cholesterol, and physical inactivity.

* Australian Institute of Health and Welfare. Living dangerously: Australians with multiple risk factors for cardiovascular disease. Bulletin 24. February 2005.

Novel treatment for cardiovascular disease

The sodium pump is a membrane protein that is critical for cellular function, determining intracellular sodium concentrations and impacting on contractility and potential for harmful cardiac rhythms via indirect effects on intracellular calcium. In the blood vessel, the activity of the pump in vascular smooth muscle cells contributes to regulation of blood vessel tone. The study has identified a novel mechanism of regulation of the sodium potassium pump which is important in healthy hearts as well as pathological conditions. The study comprises two parallel projects generously supported by the NSHRF, further characterising this signalling pathway, and examining for novel therapeutic targets that may be important for future management of heart failure, hypertension and ischaemic heart disease.

Project title: Rapid and reversible oxidative modification of the cardiac Na⁺-K⁺ pump and its role in hormonal regulation.

Summary: The research team have recently identified reactive oxygen species as key in the regulation of the Na⁺-K⁺ pump. This project examines the molecular mechanism by which this regulation occurs, as well as the role reactive oxygen species play in hormonal control of pump activity, under physiological conditions as well as in disease states.

Funded since: 2009

Investigators: Dr Gemma Figtree, Professor Helge Rasmussen

Project title: Reversible oxidative modification of sodium role in hormonal regulation of vascular tone

Summary: This study aims to examine for oxidative modification of sodium potassium pump subunits, and any associated functional effect in vascular smooth cells and blood vessels.

Funded since: 2008

Investigators: Dr Gemma Figtree, Professor Helge Rasmussen

Understanding bypass vein graft disease

Dr Bhindi is investigating the disease process that causes veins grafted during bypass surgery to block off after ten years in 50% of cases. This knowledge may potentially lead to treatments to prevent it and increase the life expectancy of bypass surgery patients. It may also reduce the risks involved for those who need surgery later on. The project can now be further advanced, thanks to a generous equipment grant for an optical coherence tomography machine.

Project title: Characterising plaque instability in by-pass vein graft atherosclerosis

Funded since: 2009

Investigators: Dr Ravinay Bhindi, Dr Gemma Figtree, Dr Michael Ward

Cardiovascular disease is a leading cause of disability. About 1.4 million Australians have a disability associated with cardiovascular conditions.*

* Australian Institute of Health and Welfare. Impact of falling cardiovascular disease death rates: deaths delayed and years of life extended. Bulletin 70. April 2009.

Trans-catheter aortic valve implementation

The Foundation has contributed funding to the successful trialling and implementation of a new procedure, Trans-catheter Aortic Valve Implantation (TAVI). The procedure involves replacing the aortic valve via a minimally invasive approach, in patients for whom open heart surgery is too risky.

Project title: Trans-catheter aortic valve implementation (TAVI)

Funded since: 2010

Investigators: Dr Ravinay Bhindi, Dr Greg Nelson, Dr Peter Brady

Scholarships

The Foundation provides scholarships for students whose research work is supervised by our leading cardiac researchers, for the period leading to the award of their PhD. In the past year, the Foundation has supported the work of four PhD candidates.

Using fish oil to prevent and treat heart disease – Brad McEwen

There are many potential health benefits from the consumption of omega-3 supplements. Studies show that consumption of omega-3 lowers cardiovascular risk and mortality. The aim of this study is to investigate the effects of consumption of omega-3 supplements in high-risk patients with established cardiovascular disease. The first stage of the study examines the effect of omega-3 on the stickiness of blood platelets as well as its ability to promote healthy thinning of the blood in healthy patients. The next stage will be to examine the effect of omega-3 on patients with increased cardiovascular risk, such as previous heart attack or diabetes. Research on omega-3 will benefit the prevention and treatment of heart disease by providing a cost-effective and simple process of low dose supplementation of omega-3. Early results are encouraging.

PhD title: Omega-3 PUFA in coronary heart Disease

Funded since: 2010

Supervisor: Associate Professor Chris Ward

Reducing heart damage caused by hypothermia – Dr Levi Bassin

Hypothermia is used in intensive care units and emergency departments to reduce brain injury in stroke or cardiac arrest victims. However sometimes the hypothermia itself causes dangerous cardiac electrical activity and so may reduce the effectiveness of the procedure. PhD candidate Dr Levi Bassin's study seeks to understand why hypothermia makes the heart so irritable. Results could lead to therapies to reduce the dangers associated with therapeutic hypothermia.

Initial findings indicate that hypothermia mimics a condition which can result in sudden cardiac death in young people (Brugada syndrome). The findings may be useful to better understand the mechanisms in that disease. Preliminary results were presented at the Annual Scientific Meeting of the Cardiac Society of Australia and New Zealand in 2010 in Adelaide.

PhD title: Effect of myocardial ischaemia, hypothermia, and subarachnoid haemorrhage on the wavefront of electrical activation and recovery in the myocardium: possible role in arrhythmogenesis.

Funded since: January 2008

Supervisor: Professor Stephen Hunyor

Repairing heart muscle with adult stem cells – Jason Seow

Stem cells play an important role both in maintaining healthy heart muscle and repairing it after a heart attack. Recent evidence shows that cardiac stem cells resident in the heart play a role in repairing damage. This opens up a new window of opportunity for heart regeneration. However, the mechanisms underlying this exciting development remain to be unravelled. PhD student Jason Seow is investigating the role of growth factors in normal heart development, as well as repair following damage to the heart. Results indicate that growth factors (Wnt) play a crucial role in maintaining the status quo of cardiac stem cells, as well as the generation of new heart cells. Further work is focused on an effective treatment for damaged heart tissues through balanced production of muscle and blood cells to regenerate the damaged heart.

PhD title: Repair of the damaged heart and the role of Wnt growth factors

Funded since: 2007

Supervisor: Professor Stephen Hunyor

Developing treatments to reverse heart tissue damage from diabetes II – Dr Keyvan Karimi Galougahi

Diabetes is a common condition that causes multiple health problems, and in particular cardiac and vascular complications. This is of increasing concern given the rising levels of obesity and diabetes in the general population.

PhD student Dr Keyvan Karimi Galougahi is examining the effect of diabetes on an important molecule, the sodium-potassium pump, which plays a key role in heart cells. Conditions such as diabetes and heart failure adversely affect the function of this molecule causing a reduction in the ability of the heart to pump blood. The initial focus of the study has been on developing an experimental model of diabetes to have a better understanding of the underlying mechanisms of the disease. This model could be used to understand the effects of diabetes in a multitude of systems and organs in the body. This study uses the new experimental model to look at the effect of the diabetes on sodium pump function in heart cells. After the characterisation of such deleterious effects, the next step in the study will be to examine the effect of specific medications to reverse or prevent such detrimental changes within the heart cells.

PhD title: The effect of diabetes on the regulation of the sodium pump in the heart

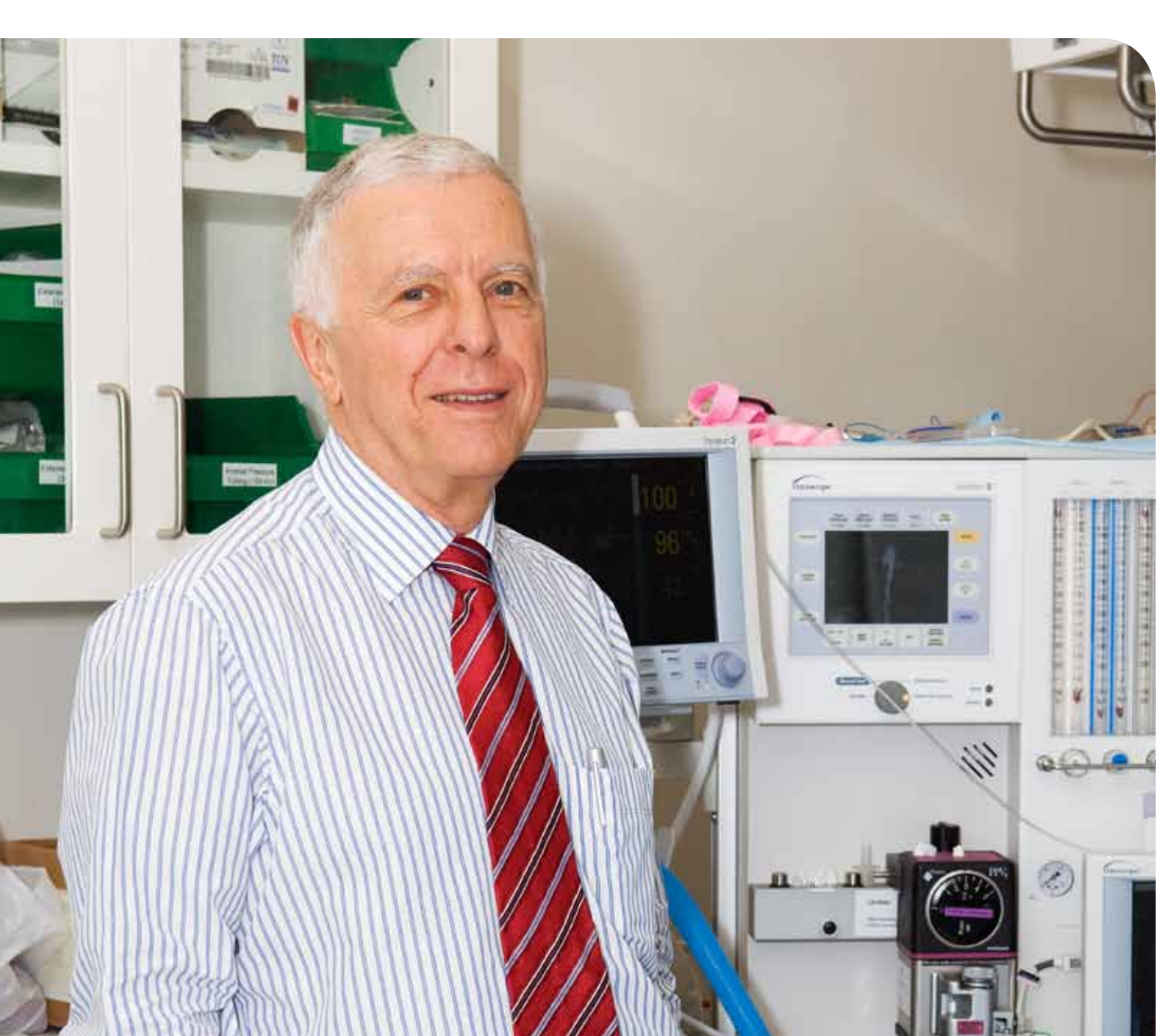
Funded since: 2010

Supervisor: Professor Helge Rasmussen

In Australia, four times more women die of coronary heart disease than of breast cancer*

**World Health Organisation*

Read more about our research programs at heartresearch.com.au



'The rewards of research in biomedical science and medicine, and clinical care of patients, merge naturally. Together they provide immense satisfaction and stimulation at the human caring level and from an intellectual angle. The challenges of both can be immense but are far outweighed by the positives. The highlights come from saving or improving quality of a life, from seeing the development of doctoral students under your care, and from pitching your work and wits against some of the best in the world in fascinating places.'

*Professor Stephen Hunyor
Professor of Medicine, University of Sydney; Director, Cardiac Technology Centre,
Royal North Shore Hospital.*

Our governance

Board of Directors

The Board of Directors is the governing body of the Foundation. It includes clinicians, researchers and business leaders. Directors are elected for a two-year term, with one half of the Board retiring at each annual election.

Committees of the Board

Following a strategic review in February 2010, the Board reviewed its committee structure and established five committees to advise on operational and strategic matters. All Directors serve on at least one of these committees, while additional expertise may be coopted as required.

Awards Committee: reviews and recommends to the Board the names of those individuals who may be offered membership of the Foundation as a Partner in Heart Health, or whose names may be added to the permanent Honour Roll. Members: Ray Knight (Chairman), Dr Peter Caspari, Paul Allison.

Finance and Audit Committee (formerly Financial Control Committee): monitors significant financial planning, management and reporting matters of the Foundation, reviews and monitors the corporate governance of the Foundation including succession planning and serves as the Board's audit committee. Members: John Pegg (Chairman), Paul Allison, Dr John Gunning, Ray Knight, Michael Lawrence, Anna McPhee, Richard Shaw

Fundraising Committee: supports significant fundraising, communications and public relations activities of the Foundation and considers new opportunities to benefit the Foundation. Members: Paul Allison (Chairman), Dr Peter Caspari, Lori Farrar, Dr Gemma Figtree, Anna McPhee, Richard Shaw, Professor Geoff Tofler

Research Advisory Committee: reviews and makes recommendations to the Board on applications for funding of project grants, scholarships and purchase of research equipment. Members are all highly qualified practitioners and researchers whose appointment is subject to approval by the Secretary of the Department of Health and Ageing. Members: Dr John Gunning AM (Chairman); Professor Stephen Hunyor; Professor Helge Rasmussen; Professor Geoffrey Tofler; Professor Carol Pollock MBBS PhD FRACP and Dr Michael Ward MBBS (Hons) FRACP PhD DDU FCSANZ.

Scientific Advisory Council: a new committee which will advise the Board on future directions in research and the resources required to support prioritised initiatives. Membership will consist of senior researchers, cardiologists and others with appropriate qualifications and experience.

Members of the Board (at October 2010)

Chairman

Ray Knight SF Fin

Vice Chairman

Dr John Gunning AM, MB BS (Hons), MD (Syd)
FRACP FACC, FCSANZ

Honorary Treasurer

John Pegg BComm FCA ACIS FAICD MSID

Honorary Medical Director

Professor Geoffrey Tofler MBBS MD FRACP FACC

Emeritus Director

Dr Gaston Bauer AM MD BS FRACP FACC

Company Secretary

Pam Davis MFIA

Directors

Paul Allison Dip. Tech. Comm (NSWIT), C.I.P.,
ANZIIF (Sen Assoc), FAICD

Dr Ravinay Bhindi MBBS (Hons), DPhil (Oxon), FRACP

Gregory Brown

Dr Peter G Caspari MB BS (Syd) DDU FRACP FACC
FCSANZ MMedHum

Dr Cedric W Deal MB BS FRCS FRACS FRCSE

Dr Gemma Figtree MBBS (Hons), DPhil (Oxon), FRACP

Peter Gunning BEc, MEc (Hons) ASIA & CFA

Professor Stephen N Hunyor MD (Syd) MBBS
MTM (Griff) FRACP FACC

Professor Levon M Khachigian BSc (Hons),
PhD DSc (UNSW)

Michael Lawrence BEc SF Fin

Professor Sharon McKinley RN BAppSc PhD

Anna McPhee BA MBA

Dr Gregory Nelson MB BS FRACP FCSANZ

Professor Helge H Rasmussen DMSc (Aarhus)
Cand Med (Aarhus) FRACP

Richard Shaw

Sue Shilbury BAppSc MBA

Dr Colin Sutton BSc, PhD, FAICD

Our team*

Chief Executive Officer

Derek Minett MFIA

Director of Development

John Shaw BA MFIA

Business Manager

Pam Davis MFIA

Communications Manager

Maya Kay BA (Hons) MPRIA
Lynn Camilleri BComms, Grad
Dip Psych, MPRIA (maternity leave
replacement from July 2010)

Database Administrator

Helen Fisher MFIA

Donor Care Officer

Maxine Winitana

Database Officer

Annette McCook

Public Relations Officer

Vanessa Condon

Accounts & Administration Assistant

Pauline Yeap

Volunteers

Sally Banek

Joan Chivas

Lori Farrar

Jane Howland

Lynn Larri

Lyndall McKee

Gisela Meyer

Arthur Moreland

Lynne Ravenhall

Fiona Taylor

Yvonne Taylor

Accountant

Tracey Shenton & Associates

Honorary solicitors

Holman Webb

Auditors

Ernst and Young

Bank

National Australia Bank Limited

* As at October 2010

Our Constitution

North Shore Heart Research Foundation operates under the legislation of the New South Wales Charitable Fundraising Act 1991 and associated regulations, including Australian Securities and Investments Commission regulations. The Foundation is an Australian Tax Office approved health promotion charity and an endorsed deductible gift recipient.

Our standards

The Foundation is an organisational member of the Fundraising Institute of Australia (FIA) and abides by the FIA's Principles and Standards of Fundraising Practice – the fundraisers' guide to ethical, accountable and transparent fundraising.

Our commitment

Promoting good governance in the administration of all we do to maintain trust between the Foundation and its supporters.

Promoting ethical values and attitudes of service, integrity, consideration for others, accountability, and personal responsibility in all our duties.

Acting honestly and in good faith in all times and in all matters in the best interest of the Foundation.



'Solving scientific problems and publishing research results and information that I have discovered through my research work are very rewarding and challenging. Endless experiments, hard work and sleepless nights are nothing compared to making a contribution to preventing and treating heart disease'.

*Dr Chia Chi Liu – Senior postdoctoral scientist,
North Shore Heart Research Group.*

Financial summary

Income	2010 \$	2009 \$
Fundraising	1,980,463	1,854,200
Bequests	1,181,686	1,250,810
Non-operating activities	255,421	152,795
Total income from all sources	3,417,570	3,257,805
Expenses	2010 \$	2009 \$
Employee costs	715,448	694,405
Fundraising and special events	473,167	350,670
Administration	189,253	307,737
Research support	1,704,381	2,100,055
Total expenses	3,082,249	3,452,867
Net surplus/(deficit)	335,321	(195,062)
Assets and liabilities (as at 30 June 2010)	2010 \$	2009 \$
Cash and cash equivalents	304,204	73,554
Trade and other receivables	115,013	50,596
Financial investments	3,265,517	3,752,528
Plant and equipment	33,812	48,100
Website	79,206	101,846
Total assets	3,797,752	4,026,624
Trade and other payables	534,276	1,106,974
Provisions	34,551	26,046
Total liabilities	568,827	1,133,020
Net assets	3,228,925	2,893,604



North Shore
Heart Research
Foundation



'Our family has suffered the traumatic effects of heart disease. I am helping to do whatever I can to reduce its impact on the community through education and research. Working with the Foundation makes me feel I can make a difference.'

Sally Banek volunteers for the Foundation as a member of the Red & White Committee, which assisted in the organisation of the Women's Heart Lunch in September 2009.

Thank you

The Foundation depends entirely on the support of the community and thanks the following generous supporters for their contributions in the 2009 calendar year:

Significant Benefactors

\$10,000 and over

John Almgren AM and Yvonne Almgren
Edward Barin
Ian Bersten
Fran Buckle
Joseph and Veronika Butta
Dorothy Cornock
Dedes Family
Jack Evans
Jessica Hore
Peter Jenkins
Joan Peterson
T A Tonkin
Michael Ward

\$5,000 and over

Charlotte and Stephen Hunyor
Patricia Lee
T Lyons
Jane Rich
Meg M Smith

\$1,000 and over

Anonymous (9)
Philip H Abbott
William Arnott
Christopher Aspland
Augustine Au
Cecily Backhouse
Sibilla Baer
Alison Battersby
Russell Beers
M A Besley AC
Judith Bishop
Peter Brownie
Norman Brunsdon AM
Lothar Bulla
John T Cameron
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Arthur Chittenden
Philip Chronican
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Peter Donnelley
George Douglass
Jeffcott H Edmunds JP
David Evans
Peter Francis
Mary Harman
Ken Hayward
Herbert Hely
(Bonnie) Veronica Julian
V Kahlbetzer
Ray and Phyllis Knight
James Lamont
Yuchun Liu
Anthony McCormick
Kevin Meyer OAM
Ian Miller
Walter K Mobbs
E H Morgan
Mark Morrison

Frank Morton
Koon-Yee Ng
Sandra Ollington
C Oppen
George Patapis
Beryl Percival
Judith Rance
Professor Rasmussen
Brian Rathborne
Beryl E Raymer
Jean Redman
Betty Reid
Warwick H Roberts
Robin Rodgers
Moreton Rolfe
George Shadlow
Justice George Sharpe
Sandy and Charlie Shuetrim
David Smiles
Shirley Smyth
Judith Somers
Robin Stevenson
Avo and Jacqueline Tevanian
Peter Tracey
Suzanne Tracey
Brian Tucker
Bruce and Barbara Walker
Ronald Webb
W J Weston
Robert White AO
Sydney Wickham
Marg Williams
William Yee

Founders' Society

Estate of the late Harold Ernest Court
Estate of the late Norman Francis
Estate of the late Ernest Kenneth Isherwood
Estate of the late Sarah Lomasney
Estate of the late Amelia Martin
Estate of the late James McBurney
Estate of the late Doreen Perry
Estate of the late John Rance
The Small Family Estate
Estate of the late Emily Elizabeth Stevens
Estate of the late Beryl Stephens
Estate of the late George and Mary Thompson
Estate of the late Fredrick Vines

Trusts and Foundations

AMP Foundation
Ernst & Young Foundation
Skipper-Jacobs Charitable Trust
The Frank Buckle Family Trust
The Lady Proud Foundation
The Mill House Foundation
Wood Family Foundation

Community Organisations

Lions Club of Frenchs Forest
Rotary Club of Neutral Bay Inc
Rotary Club of North Sydney
Unaccompanied Baggage Choir

Corporate Supporters

Ace Gutters
Alphapharm
Benfield (Australia)
Biotronik Australia
Boston Scientific
Copy Press Printing
Cordis
Dedes Restaurant
Forster Bros Guttering and Services
Global Transport and Automotive Insurance
Holman Webb
Independence Studios
Leaf Free Gutter Guard
Livingstone Investments (NSW)
Lovincare (Aus)
Medtronic Australasia
Mr Fothergill's Australia
Steel Roofing Supply Centre
St Jude Medical
The Creative Zoo
Toshiba Australia



Ray Knight, Foundation Chairman (left), and Professor Geoffrey Tofler, Foundation Honorary Medical Director, unveil the 2009 Honours Board.

Create a brighter future for heart research, with just a few simple words.

Despite some remarkable advances, heart disease still casts a very dark shadow. 50% of Australians are affected in some way, either personally or through family members or friends. Here's an even more sobering fact: 34% of all deaths in Australia are attributed to heart disease. That's more than any other cause of death including all cancers combined.

In the past, a family history of heart disease was the most reliable predictor. But poor lifestyle now puts more and younger people at risk. And with the current obesity epidemic has come the tandem epidemic of diabetes. It's a challenging time.

North Shore Heart Research Foundation has a clear goal in all this – to reduce the devastating impact of heart disease. By making a bequest in your Will you can help solve the puzzle of beating heart disease, and give heart to future generations.

Your bequest to the North Shore Heart Research Foundation could provide talented researchers – from PhD students and scientists to senior research fellows – with scholarships and fellowships. It could also supply key scientific equipment and infrastructure or create enduring funds for groundbreaking research.

Simple wording in your Will can create a lasting legacy, in your own name, or the name of someone you love. If you would like to talk to us about making provision for the North Shore Heart Research Foundation in your Will, please contact Derek Minett, Chief Executive Officer, on (02) 9436 0056. All enquiries are treated with the utmost respect and confidence.

