



Professor Evan Simpson and Professor Peter Fuller, Prince Henry's Institute

Double Medal Honours for Victorian Scientists

Two PHI researchers have been internationally recognised for their contributions to hormone research.

PHI Director Professor Matthew Gillespie congratulated both Professor Evan Simpson and Professor Peter Fuller on their awards by the Society for Endocrinology. "These prestigious awards also highlight and reinforce PHI's position as one of the world's premier centres for hormone research" he said.

Professor Evan Simpson, Head of the Metabolism and Cancer Laboratory at PHI, will be awarded the 2011 Dale Medal, the highest accolade bestowed by the Society. The award is made to a member of the scientific community in recognition of

outstanding studies which have changed our understanding of endocrinology in a fundamental way.

The award of the Dale Medal confirms Professor Evan Simpson's role as a world leader in the field of research into the hormone oestrogen. His group was the first to clone the gene encoding aromatase, the key enzyme that controls production of this hormone. His research led to the concept that oestrogen action in postmenopausal women is due to local production and action in sites such as the breast, bone and brain.

Evan's research has led to the development of targeted drugs for breast cancer therapy. His research has also led to the discovery of new and unexpected roles for oestrogens in both men and women. Current research at PHI is focused on the role of oestrogen in several important health conditions, including breast cancer, obesity and diabetes.

Inside - news, research updates, awards, **breast cancer link**, publications, PHI alumni, students fellows, history, community...

Professor Peter Fuller, Associate Director and Head of the Steroid Receptor Biology Laboratory at PHI, is to be awarded the 2011 Hoffenberg International Medal. The award is made to an endocrinologist judged to have made outstanding contributions to hormone research and also promotes international collaboration between researchers.

The award highlights Professor Peter Fuller's international reputation as both a clinician and a scientist.

Peter's research interests lie in understanding the molecular mechanisms of the steroid hormone aldosterone and its role in hypertension and cardiovascular disease. His laboratory also studies the molecular pathogenesis of granulosa cell tumours in the ovary.

Both Evan and Peter will travel to the UK in 2011 where they will give their medal lectures at the Society for Endocrinology annual meeting.

Research News

Message from the director



This year PHI has successfully transitioned to a new incorporated body, which entailed the appointment of a new Board. A key responsibility for the Board has

been overseeing the development of the Monash Health Translation Precinct.

The transition to an incorporated body was also an opportune time to consider the Institute's research focus and structure. Several new laboratories and laboratory heads have been ratified. These changes are reflected in a brand new PHI website, launched in September. I would encourage you to visit the website for more details of our research endeavours and the latest Institute news and developments.

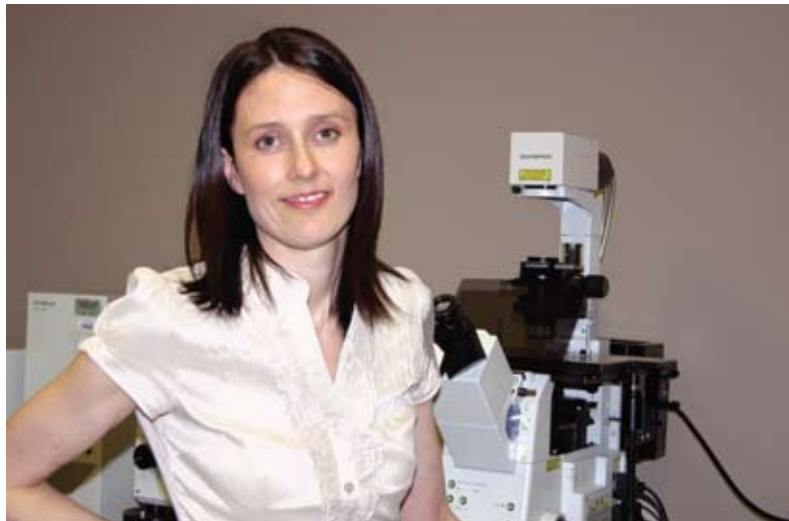
As we prepare to celebrate the 50th anniversary of the Institute in 2010 we highlight the very early days that led to its establishment at Prince Henry's Hospital. Future newsletters will focus on some of our achievements and milestones through five decades of research.

It is also appropriate to recognise the achievements of current PHI researchers, past staff and those who work closely with us. In particular we announce new PHI Fellows who have made sustained research contributions to help us achieve our goals.

Professor Matthew Gillespie
Director, PHI

\$100,000 Foundation Boost

The Clive and Vera Ramaciotti Foundations have announced that researchers at PHI will receive a funding boost of \$100,000



Dr Karla Hutt (pictured), NHMRC Postdoctoral Fellow in the Ovarian Biology Laboratory, has received a grant of \$50,000 for her project titled "When good eggs go bad: Identification of genes associated with the loss of oocyte quality with age."

Karla's research is of particular importance in understanding how female fertility declines with age. Women aged over 35 years experience greater difficulty in getting pregnant than younger women and one key aspect in the decline in a woman's fertility can be the healthy potential of her eggs.

Immature eggs are stored in a woman's ovaries for many years. By the time a woman reaches 35 years, fewer and fewer of these stored eggs have the capacity to successfully mature and be fertilised to start a healthy pregnancy. The new funding will help Karla explain some of the genetic causes

that underly these fertility problems in older women.

The Clive & Vera Ramaciotti Foundations also made a substantial contribution of \$50,000 towards the purchase of a new technology platform at PHI, a GE Typhoon high performance gel and blot imager.

Professor Matthew Gillespie, PHI Director and leader of the Bone, Joint & Cancer Laboratory, said that the new molecular imaging scanner was the most useful and versatile instrument of its type. The imaging machine is used by leading research laboratories around the world. Professor Gillespie said that securing the new technology for PHI would advance translation research and drug discovery.

The Clive and Vera Ramaciotti Foundations are one of Australia's leading private contributors to medical research.

Gene Suite

Funding from the Marion Flack Foundation has established a new Gene Transfer Suite in the East Wing of the Institute.

The new equipment is being used to identify and analyse the role of specific genes in PHI research focussing on cancer and bone health, women's health, and cardiovascular disease.

Microscope Gift

A generous gift from a PHI supporter has enabled the purchase a new stereoscopic microscope.

The Nikon SMZ1000 will be a valuable and flexible resource shared across PHI research laboratories. The new equipment is currently being used in research focused on the role of very early development in health problems such as kidney disease. We are grateful to PHI supporter Mr Ted Billson in making this possible.



The Nikon SMZ1000 microscope

“Critical link” between obesity, hormones and breast cancer

PHI researchers have made a new and “critical link” between obesity, hormones and breast cancer that may lead to a fresh approach to preventing breast cancer in older women.

The researchers say that understanding the new link is vital, given the latest Australian figures that show breast cancer cases are increasing and also that obesity is very common in older women.

Newly released Australian statistics show that 1 in 9 women will develop breast cancer before age 85 years. Recent survey data also indicates that more than 2 in 3 older women in the population are overweight or obese.

“The consequences of the obesity pandemic are that tens of millions more women than previously thought might develop breast cancer worldwide” says Dr Kristy Brown, the Terry Fox Foundation Fellow at PHI.

It has been known for some time that the risk of breast cancer increases with obesity but the new findings explain how fat cells can

drive breast cancer development. The researchers have shown that factors produced by fat tissue can stimulate oestrogen production in the breast. The growth of most breast cancers in older women is driven by the key hormone oestrogen.

Previous PHI research has shown that in obese postmenopausal women, it is the local formation of oestrogen in the breast itself which is responsible for their increased risk of breast cancer.

Current breast cancer treatments include drugs that block oestrogen production throughout the body and these have been clinically demonstrated to slow or stop further breast cancer growth. However shutting down levels of this hormone throughout the body with these “broad approach” drugs can also have some serious side effects, especially on bone and joint health and possibly also the brain.

“We now have a new pathway to develop highly targeted breast cancer therapies directed at the breast itself” says Professor Evan Simpson who leads the Victorian Breast Cancer Research Consortium funded research group at PHI.



Dr Kristy Brown, Terry Fox Foundation Fellow, PHI

The PHI researchers suggest that the new link they have found could form the basis to developing a preventative drug based approach, which reduces the increased breast cancer risk faced by growing numbers of overweight and obese women.

The team is now exploring several drug candidates that would shut down hormone production specifically in breast tissue but not affect other parts of the body which benefit from oestrogen. One drug showing particular promise in reducing breast cancer is Metformin, which is already commonly used to treat Type 2 diabetes.

Publication Highlights

Insect cells aid new treatments for hypertension (April 2009)

Researchers at PHI have developed an important tool which may accelerate the development of treatments for hypertension and heart disease. They have, for the first time, used molecular engineering so that insect cells produce a key human protein involved in salt retention and heart disease.

Purification and characterization of recombinant human mineralocorticoid receptor. Clyne CD, Chang CY, Safi R, Fuller PJ, McDonnell DP, Young MJ. *Mol Cell Endocrinol*. 2009 Apr 10;302(1):81-5.

Study links enzyme to family breast cancer (May 2009)

Research at PHI has shown that some women, known to be at high family risk of breast cancer, have higher levels than other women of a key enzyme, aromatase, in their breast tissues. The research findings raise the possibility that preventative drug treatments, which suppress the enzyme, may be an alternative option to breast removal for these women who carry a high breast cancer risk.

Aromatase expression is increased in BRCA1 mutation carriers. Chand AL, Simpson ER, Clyne CD. *BMC Cancer*. 2009;9:148.

Bone loss mechanisms unraveled (Sept 2009)

Researchers at PHI, in collaboration with St Vincent's Institute, have found that an experimental drug with potential as a diabetes treatment causes rapid loss of bone. This drug mimics some of the desirable effects of exercise on muscle, and normally targets an important enzyme inside the cell. However, this side effect on bone was not caused by the usual actions of the drug, suggesting it has some other important target in the bone. The study suggests that bone damage and osteoporosis could result from some anti-diabetic medications.

Germline deletion of AMP-activated protein kinase (beta) subunits reduces bone mass without altering osteoclast differentiation or function. Quinn JM, Tam S, Sims NA, Saleh H, McGregor NE, Poulton IJ, et al. *FASEB J*. 2009 Sep 2.

3D view of sperm development pathway (Oct 2009)

PHI researchers have revealed new complexities in how healthy sperm are formed in the testis. Their findings provide a 3D view of how genes and hormones interact in diverse ways during sperm production.

This deeper understanding may lead to novel male contraceptive formulations and new ways of examining the fertility problems seen in some 1 in 20 men.

Transcriptional profiling of the hormone-responsive stages of spermatogenesis reveals cell-, stage-, and hormone-specific events. O'Donnell L, Pratis K, Wagenfeld A, Gottwald U, Müller J, Leder G, McLachlan RI, Stanton PG. *Endocrinology*. 2009 Nov;150(11):5074-84. Epub 2009 Oct 1.



Touring Ovarian Cancer Lab



Senator for Victoria, Helen Kroger, recently toured the PHI Ovarian Cancer Biomarkers Laboratory and met several researchers.

This research team is seeking to develop an early detection test for what is often described as a “silent killer”. Senator Kroger commented that she was impressed with how much progress had been made since the research program was established in 2006.

In August, senior executives from L’Oréal Paris and Witchery also toured the laboratories. The two companies provide significant support for research fellowships at PHI through the Ovarian Cancer Research Foundation.

Photo: Senator Helen Kroger and Andrew Stephens, Head of the Ovarian Cancer Biomarkers Laboratory.

PHI website refreshed

In September PHI launched a brand new website, with a fresh look and feel.

The web pages highlight progress in over 50 different research projects which stretch across the key themes of Cancer, Cardiovascular Disease, Genes & Healthy Development, Men’s Health and Women’s Health.

There are also individual profiles of many researchers who work in the 17 PHI Laboratories. As well as scientific background, the site covers the latest news and events at the Institute.

A new website feature is the ability to sign up to our mailing list for regular updates.



www.princehenrys.org

Experts Recognised

Several senior PHI researchers have recently been recognised by their peers in scientific societies as international experts in their fields.

The Australian Government has also just appointed two PHI researchers to serve on high level committees with the National Health and Medical Research Council of Australia (NHMRC).



Professor Matthew Gillespie has been elected President-elect for the Australian & New Zealand Bone and Mineral Society. Matthew was also

appointed by the Australian Government to serve on the NHMRC Research Council for the 2009-2012 triennium.



Professor Jack Findlay received a Life Membership of the Society for Reproductive Biology. Jack has also been reappointed by

the Australian Government to chair the NHMRC Embryo Research Licensing Committee.



Professor John Funder has recently been inducted into the Royal College of Physicians in

PHI Fellows

16 leading Australian medical researchers have been announced as PHI Fellows in recognition of their substantial contributions to the institute.

Prince Henry’s Institute has a longstanding history of research delivery, academic mentoring and community engagement.

The PHI Fellows announced in 2009 are: Dr Nuzhat Ahmed (Royal Women’s Hospital), Prof John Aitken (University of Newcastle), Prof John Bertram (Monash University),

A/Prof Timothy Cole (Monash University), A/Prof Jeff Kerr (Monash University), Prof Gab Kovacs AM (Monash IVF), Prof David de Kretser AC (The Governor of Victoria), A/Prof Mark Frydenberg (Australian Urology Associates), A/Prof Tom Jobling (Ovarian Cancer Research Foundation), A/Prof Kate Loveland (Monash University), A/Prof Moira O’Bryan (Monash University), Dr David Nikolic-Paterson (Monash University), Dr Luk Rombauts (Monash IVF), Prof Ian Smith (Monash University), A/Prof Peter Temple-Smith (Monash Institute of Medical Research), Dr Greg Tesch (Monash Medical Centre)

Further details of the new PHI Fellows: www.princehenrys.org/phi-fellows

Contact Us

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Students & Alumni

PHI Alumni

Over the last 50 years, the careers of many researchers have been nurtured at Prince Henry's Institute.

Whilst some students have travelled as far afield as the United States and Europe to further their research careers, others continue to be part of the local research community here in Clayton.

A fine example of a recent PHI alumnus is **Dr Mark McCabe**, who completed his doctoral studies at PHI in 2008, where his research explored how hormones control sperm production. Mark is now a clinical researcher in London, working closely with the renowned Great Ormond Street Children's Hospital in London. There, he has been analysing the genetic changes that can lead to serious hormone related conditions, especially in children.



Another PHI alumnus, from the same year, is **Dr Tu'uhevaha Kaitu'u-Lino** who has just scooped the Cosmopolitan Magazine Fun Fearless and Female Award.

Her research at PHI focussed on the problems that up to 1 in 10 women have with significant period pains. Tu'uhe is now undertaking postdoctoral studies at Monash Institute for Medical Research, a partner with PHI in the Monash Health Translation Precinct, where she is investigating the role stem cells play in problem periods.

Former PHI student **Professor Michael Cowley** has just received the Science Minister's Prize for Life Scientist of the Year. Michael is a past honours and PhD



Dr Mark McCabe completed his doctoral studies at PHI in 2008 and is now researcher in London.

student of PHI and trained under Iain Clarke between 1994 and 1998. After several years researching overseas, he returned to Monash University. PHI congratulates Michael on this major award which recognises his research on metabolism and obesity.

If you are an ex student or researcher from Prince Henry's Institute, or even from earlier days with the Medical Research Centre at Prince Henry's Hospital, we would be delighted to hear from you.

Send an email to: alumni@princehenrys.org and let us know what you are doing these days!

Class of 2009

PHI celebrates the achievements of recent Honours and PhD students.

PHI students completing their doctoral studies in 2009 were **Jenny Chow, Emily Lam, Yogesh Mekanji, Amanda Rickard and Chelsea Stoikos**.

In addition, Honours students completing their studies during the year included **Marina Bashir, Justin Chen, Brett Fisher and Jenna Haverfield**.

50 Years Ago

In October 1959 Prince Henry's Hospital, then located in St Kilda Rd Melbourne, was considering the need to establish a "top class medical centre".

In a recently rediscovered internal hospital report, which predates the establishment of the Prince Henry's Hospital Medical Research Centre, the rationale was outlined that "sound medical knowledge must precede sound medical practice". The case was made to establish a new medical research centre, with strong links to the hospital.

It would be the following year, in June 1960, when the Interim Committee of Prince Henry's Hospital Medical Centre would meet

formally for the very first time. Nearly one hundred Foundation Corporate Members committed funds to the establishment of the Centre's laboratories.

The first steps were tentative and the ambitious plans were delayed by other developments at the hospital as well as difficulties in securing capital and research funds. Yet within five years of these initial thoughts, outlined in 1959, considerable progress had been made in developing the vision for the research centre at the hospital.

By 1962, Dr Bryan Hudson had been appointed as the first Director and he brought with him a small research team from the Alfred Hospital. In the following year they moved into new laboratories on the eleventh floor of Prince Henry's Hospital in St Kilda Road.

Whilst initial thinking had been that the Medical Research Centre would focus on research into stroke, or "cerebro-vascular accidents", as it was termed at the time, the strengths of the research team began to emerge in endocrinology, the study of hormones.

A program of basic and clinical endocrine related research emerged funded through philanthropic support and also a smaller amount of grant funding from the National Health and Medical Research Council.

In 1963 Dr Henry Burger was appointed as Associate Director of the Centre. Henry was unable to immediately take up full time duties, as he was completing post-doctoral research overseas. He returned in 1965 and eventually led the Medical Research Centre as Director through almost two decades of outstanding hormone research.

Community News

Scientists in Schools

PHI researchers are participating in an Australian Government initiative, Scientists in Schools.

The program helps to engage and motivate school students in their science studies, and broadens awareness of the exciting career opportunities available in science.

Five PHI researchers have recently been matched through the initiative. PHI has a special relationship with the education scheme since former PHI researcher Dr Lynette Airey is now the Victorian Project Officer for the Scientists in Schools scheme.

"PHI has always attracted world-class researchers. I'm thrilled that so many PHI scientists have volunteered to communicate their passion for science to teachers, children and the wider community through Scientists in Schools" said Lynette.

Each PHI researcher has been supported in building a long-term, professional partnership with a matched teacher and has been



Young Scientists in Action

working closely with them to help incorporate the latest developments in medical research into their classrooms.

Developmental biologist Dr Mai Sarraj has created an interactive lesson, "Scientists in Action", which she has presented to primary school students in Mitcham and Milgate.

"It is exciting and rewarding to interact with young school students and spark their enthusiasm and interest in science" said Mai.

If you are a school teacher interested in developing educational partnerships with PHI researchers please contact us.

PHI Rides Again

A team of cyclists, with old veterans and some new blood, is preparing for the 5th annual Ride for PHI.

Next March, the team will cycle 520km through country Victoria over 24 hours in Woody's Murray to Moyne cycle relay.

The fundraising target for this event in 2010 is to raise \$50,000 for PHI research. Sponsorships and donations will directly benefit PHI research towards developing

better diagnosis and treatment of cancer, heart disease, diabetes, osteoporosis and fertility problems.

Several Ride veterans will once again get in the saddle. For Andrew McCallum, Commercialisation Manager at PHI, this will be his fifth ride whilst for PHI colleagues Vincent Harley and Bruce Watson it will be their fourth ride.

Institute Director Professor Matthew Gillespie, riding for a third year, said that the Ride for PHI, as well as being a vital community fundraiser, also helped in important teambuilding. "This event takes lots of planning and training. I'm looking forward to our weekend training rides around the Melbourne suburbs and nearby country," said Matthew.

In 2010, the cycle pelaton will be augmented by six fresh riders from Melbourne legal and patenting firm Davies Collison Cave.

This firm has been a supportive PHI partner for several years. Mark commented that he expected it would be "a great bonding experience for the DCC crew to team up with the riders from PHI in support of great medical research"

One of the key sponsoring organisations throughout the five years has been Australia's largest crane company Boom Logistics. John Robinson, Company Chairman and former Board Chairman of PHI, said that the support "recognised the enormous benefits to public health that medical research contributes"

A range of company sponsorships are available for the Ride for PHI, and these can be tailored to suit individual requirements. Contact **Andrew McCallum on 03 9594 7908** to discuss these opportunities to join the team by sponsoring the Ride for PHI.

The Ride for PHI will take place over the 27th & 28th March 2010. Personal donations linked to the Ride will also open shortly.



DCC riders (L-R): Mark Roberts, Sam Mickan, Grant Barry and Steven Wulff will join the PHI Ride for Research in 2010.



DAVIES COLLISON CAVE



PHI research

...improving the quality of life through the investigation of hormones in the fields of reproductive health, cancer, diabetes, obesity, bone health and cardiovascular disease.

...includes fundamental laboratory research understanding human biology, translational studies focused upon developing better diagnostics and new treatments and clinical programs to improve patient care.

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