

insight

PRINCE HENRY'S INSTITUTE OF MEDICAL RESEARCH NEWSLETTER, AUTUMN 2005

Director's message



Dear Friends,

Welcome to the first issue of *Insight* for 2005. In this issue we showcase new discoveries into male infertility and breast cancer research. I am also proud to be included in this issue as the recipient of the US Endocrine Society Roy O Greep Award. We say au revoir after 25 years to one of our senior scientists, Professor Iain Clarke, a leader in the field of brain and hormone research.

Happy reading

Professor Evan Simpson

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Hormone ignites sperm production – new hope for infertility treatment

Scientists from Prince Henry's Institute have discovered new information about how sperm is produced, which could lead to new infertility treatments for men.

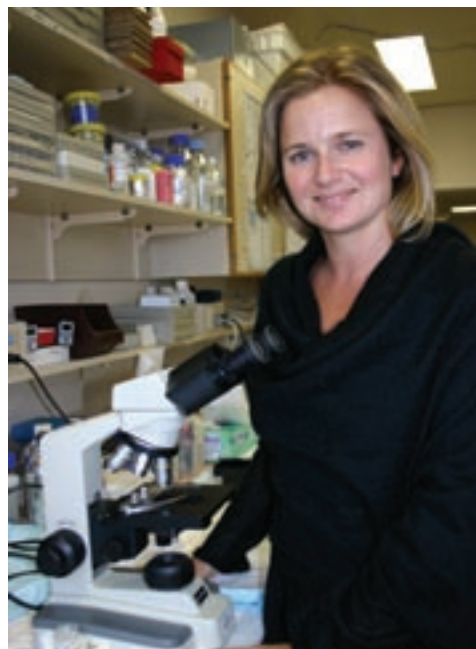
Dr Sarah Meachem from Prince Henry's Institute, in collaboration with Dr Stefan Schlatt of the University of Munster, Germany, have discovered that by replacing the hormone FSH (follicle stimulating hormone) into an infertile animal model, crucial early sperm production is kick-started.

In Australia, it is estimated that one in 20 men are infertile. "It is largely unknown why men are infertile. Better understanding of what occurs in sperm production is essential in order to design new treatments to combat this health problem," Dr Meachem said.

"This model is very useful as it helps us to understand what happens in men who suffer infertility such as after chemo or radio therapy, when sperm production is completely shut off."

"There are no comprehensive human studies that look at how FSH influences sperm development. What is exciting is that this research has given us a clue for what to look for in the human," she said.

Human studies are now underway at Prince Henry's Institute of Medical Research.



Senior Research Officer Dr Sarah Meachem investigates male infertility

"Furthermore, we have proved that adult Sertoli cells, essential for the nutritional and structural support for developing sperm, are modified by hormone treatment. This is contrary to 30 years of dogma that says Sertoli cells are not previously modifiable."

"We are excited that these discoveries could help to create new treatments for men suffering infertility," Dr Meachem said.

This research was published in the March 2005 issue of *Biology of Reproduction*.

Prince Henry's Director wins prestigious US Endocrine Society award

The US Endocrine Society has recognised the outstanding achievements of Professor Evan Simpson, Director of Prince Henry's Institute, by awarding him the 2005 Roy O. Greep Award.

The Award is given in recognition of Professor Simpson's contributions to our understanding of hormones, particularly estrogen and aromatase, the enzyme responsible for estrogen biosynthesis. The recipient of the Award will present a Plenary Lecture at the US Endocrine Society Annual Meeting in San Diego in June 2005.

Professor Simpson is recognised as the world leader in the area of estrogen biosynthesis.

Over the last 25 years, his work has shown that estrogen plays an important role in the development of breast cancer, the maintenance of bone mineralisation and cognitive function.

Professor Simpson's lab was the first to clone the cDNA and subsequently the human gene encoding aromatase. His work has major significance for the future use of aromatase inhibitors over estrogen receptor antagonists for breast cancer treatment.

Dr Simpson's group has, in collaboration with clinical investigators, studied aromatase levels in

estrogen deficient humans and created a mouse model of estrogen insufficiency, the ArKO mouse.

These studies have revealed many new and unexpected roles for estrogens, including roles in male libido and in prevention of obesity.

Professor Simpson has published over 350 peer reviewed articles, invited reviews and book chapters. He is one of the four most cited scientists in Australia, in the field of Biochemistry and Cell Biology.

He has received numerous awards including the Trans-Atlantic Medal and the Asia and Oceania Medal from the UK Society for Endocrinology and the President's Scientific Achievement Award from the US Society for Gynecological Investigation.

He has mentored over 60 PhD students and postdoctoral Fellows, many of whom hold senior positions in obstetrics/gynaecology and endocrinology worldwide. Since 1998, Professor Simpson has provided leadership as Director of Prince Henry's Institute of Medical Research.



As a Group Leader in the Victorian Breast Cancer Research Consortium, his current research is directed towards discovering new and better therapies for breast cancer prevention and treatment.

For more information visit www.endo-society.org

Research discovery

New targets for breast cancer

Research from Prince Henry's Institute has revealed two potential new targets for the treatment of breast cancer.

The protein LRH1, previously known for its role in the liver and the pancreas for controlling cholesterol and bile production, has been shown to play a dual role in breast cancer.

In 2002, Dr Colin Clyne from Prince Henry's Institute and his team were the first to show that LRH1 has a direct connection with breast cancer via estrogen, which stimulates cancer growth.

His current research, published in the prestigious US journal *Cancer Research* in January 2005, shows that LRH1 plays a dual role in furthering tumour growth of the cancer.

"Firstly, what this research shows is that LRH1 causes the fat tissue surrounding a breast tumour, to produce estrogen, which is required for tumour growth."

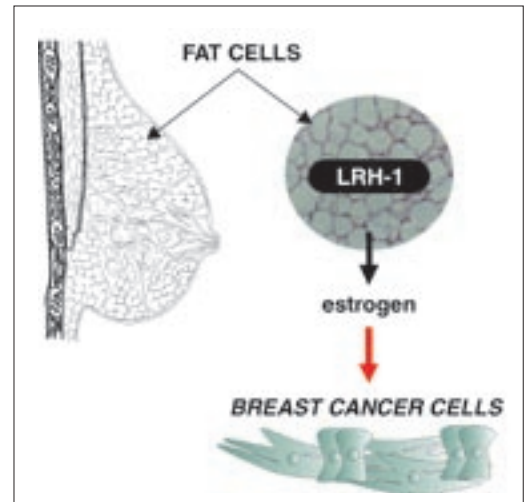
"Secondly, LRH1 is highly present within the tumour itself where it has a direct pathway to stimulate tumour growth," said Dr Clyne.

"We are very excited about these findings as it shows that LRH1 is a significant target for the treatment of breast cancer," he said.

The work is a collaboration between Prince Henry's Institute and SENDAI University Tohuko, Japan. It is supported by the Victorian Breast Cancer Research Consortium and the National Health and Medical Research Council of Australia.

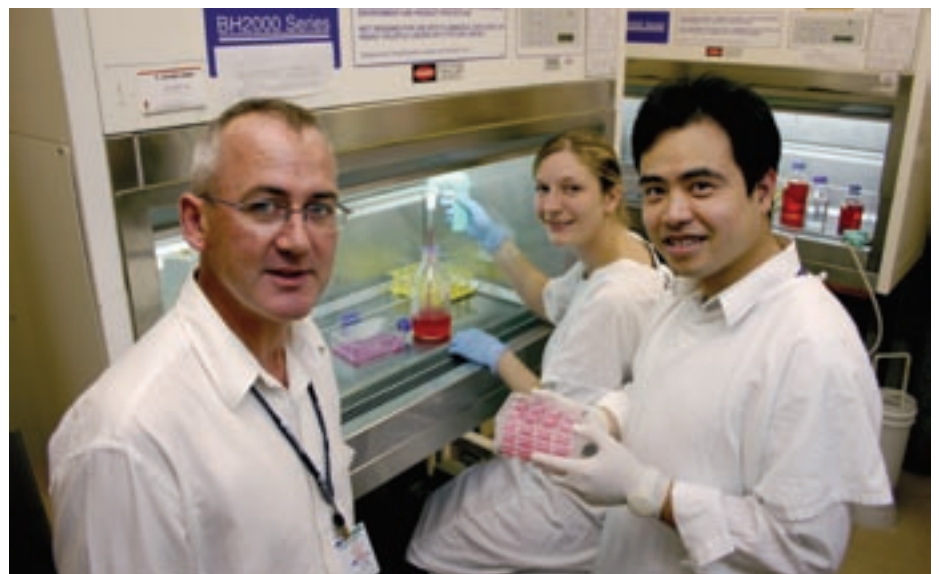
PHIMR Scientist Wins RD Wright Biomedical Award

The National Health and Medical Research Council has recognised the work of Dr Colin Clyne by awarding him a 2005 RD Wright Biomedical Career Development Award to investigate LRH1 as a potential treatment for breast cancer as well as obesity and infertility.



LRH-1 plays a dual role in breast cancer growth via fat and cancer cells.

The award recognises the best young Australian researchers in biomedical research and will allow Dr Clyne to conduct his research into LRH1 for the next five years.



Dr Colin Clyne, RD Wright Fellow with PhD student Agnes Kovacic and Dr Jiong Zhou investigate treatments for breast cancer

Leading scientist in hormone and brain research departs PHIMR



After 25 years at Prince Henry's Institute, Professor Iain Clarke leaves to take up a tenured appointment as a full Professor at the Department of Physiology at Monash University.

Since the early 1980's Professor Clarke has conducted studies into the hypothalamus, the pituitary gland and the control of the endocrine system.

The hypothalamus is at the base of the brain and transmits information to the pituitary gland. The pituitary gland then amplifies and relays these signals to the endocrine organs of the body (ovaries, adrenals etc). Thus, the entire hormonal system is driven by the brain and hence is an important area of research.

Professor Clarke has published over 350 papers including authoritative reviews and chapters in this field.

During his time at Prince Henry's Institute, Professor Clarke devised novel means to study the brain control of hormonal secretion and this work received significant international acclaim.

His work in the field regulation of body weight and factors relevant to control of obesity, has also received international recognition.

Professor Clarke received the Asia and Oceania Medal from the UK Society for Endocrinology 2001, was awarded a Senior Fulbright Travelling Fellowship in 1997, and received the Woodward Prize for Excellence in Research in Neuroscience in 1992.

He was appointed a Senior Research Fellow of the National Health and Medical Research Council in 1987 and became a Senior Principal Research Fellow in 1998.

Professor Clarke established the PHIMR Biological Research Centre at Werribee and was Director of the Centre from 1988-2005. He established the venture of Antibodies Australia, a business owned by Prince Henry's Institute that provides low cost antibody service to Australian and international researchers.

Starting his new role at Monash University in April 2005, Professor Clarke will undertake studies into the genetic causes underlying obesity and the role of energy expenditure.

During his time at Prince Henry's Institute, Professor Clarke devised novel means to study the brain control of hormonal secretion and this work received significant international acclaim.

He will maintain collaborative work with Prince Henry's Institute in brain research.

All at Prince Henry's Institute will miss his jovial personality and his research expertise and wish him well in his new role at Monash University.

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