MONASH INSTITUTE OF MEDICAL RESEARCH

2012 Annual Report

ABOUT MIMR

Vision

History

Organisational Structure

VISION

As a major medical research institute, MIMR will enhance human health and quality of life through research, innovation and discovery in biology, medicine and biotechnology.

HISTORY

Emeritus Professor David de Kretser AC established the Monash Institute of Reproduction and Development in 1991.

The Institute originally brought together scientists and clinicians undertaking research into conception, birth and development at the Centre for Early Human Development, Monash Medical Centre, with scientists working in the field of male reproductive health within the Department of Anatomy, Monash University.

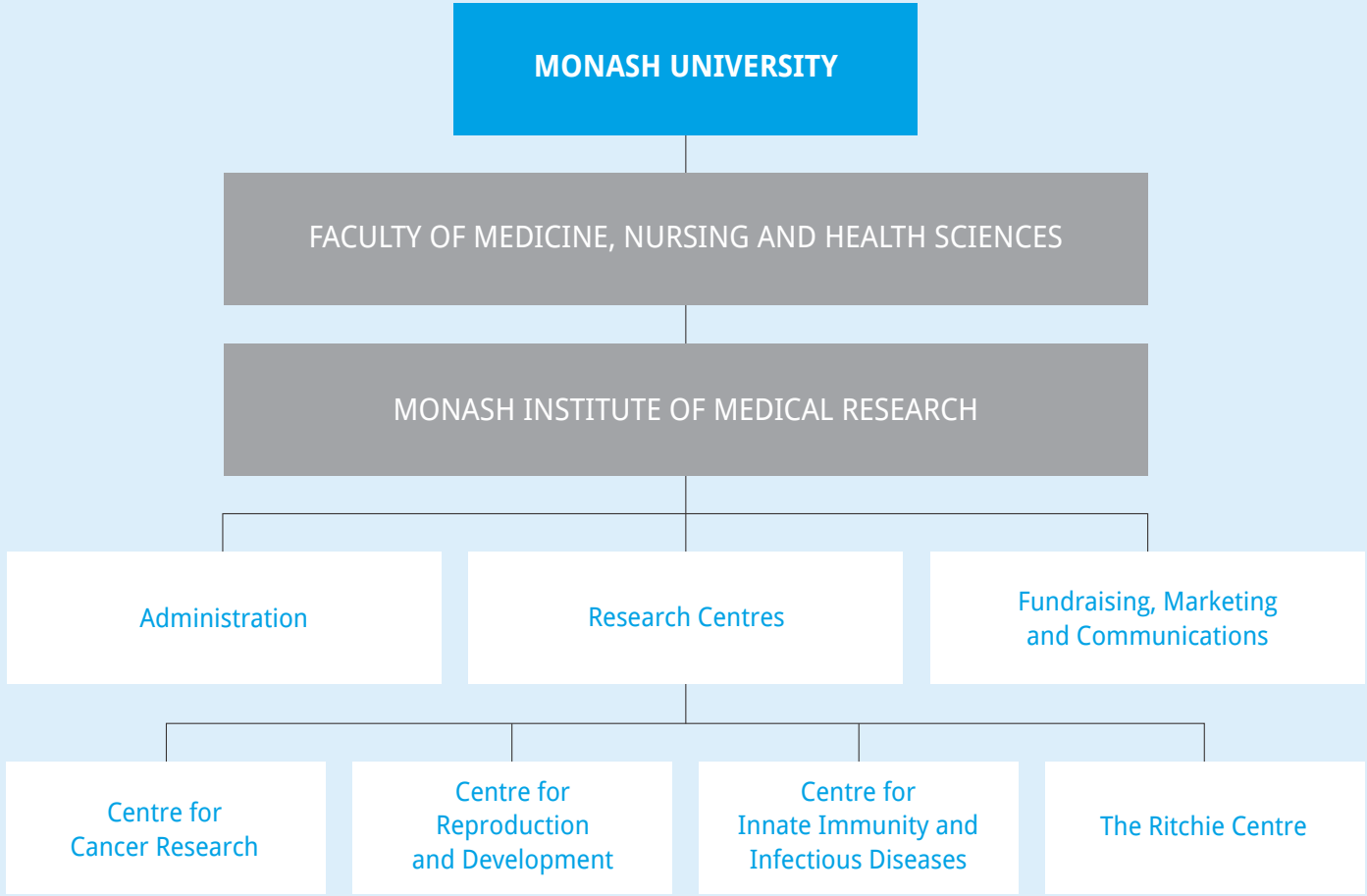
Over the years, the research conducted at the Monash Institute of Reproduction and Development benefited people worldwide, including infertile young people, premature babies and their families, and men with prostate cancer.

Recognising that its research had evolved beyond reproduction and development, the Institute became the Monash Institute of Medical Research in 2005.

Following Professor de Kretser's retirement in 2005, Professor Bryan Williams, an internationally recognised cancer researcher, commenced as Institute Director.

Today, under Professor Williams' leadership, more than 300 scientists and students carry out research into fetal and child health, cancer, inflammation, infectious diseases, women's health, genetic diseases and stem cells.

ORGANISATIONAL STRUCTURE



DIRECTOR'S MESSAGE

DIRECTOR'S MESSAGE

This year saw the major announcement in April by the Federal Member for Chisholm, Ms Anna Burke MP, of $71 million in Federal Government funding to build the State's first multidisciplinary translational research building as part of the Monash Health Translation Precinct (MHTP).

The MHTP is a partnership between Monash University, MIMR, Prince Henry's Institute and Monash Health. This new facility will include a series of linked, disease-themed laboratories and clinical research units, and will expand to 800 the number of laboratory and clinical researchers accommodated on the campus.

Our second major highlight this year was the launch of the Australian Cancer Research Foundation (ACRF) Centre for Cancer Genomic Medicine in October, conducted by the Federal Member for Hotham, the Hon Simon Crean MP. The ACRF provided $1.6 million in funds for vital next generation sequencing equipment for the centre, which will give researchers access to genetic profiles of specific cancers.

The centre is a part of the MHTP Medical Genomics Facility based at MIMR.

This year MIMR visited San Remo for an Institute retreat during April. For two days researchers presented their work, providing a perfect opportunity to expand our knowledge on the research being carried out within the Institute, and secondly, to promote collaborative projects between the Centres.

In May the Institute held a review of its research, conducted by five international and national scientists, chaired by US National Academy of Sciences member Professor George Stark.

The Scientific Review identified positives and challenges for the Institute and each of the Centres, and provided recommendations that are in the process of being implemented.

The committee also highlighted the opportunities of the MHTP building and the importance of strong leadership and support from the University during this development, as well as the problems posed by restrictions on growth due to financial imposts.

continued...

"The Institute was very successful in attracting National Health and Medical Research Council (NHMRC) funding this year, with a success rate of **31 per cent** for project grants."

DIRECTOR'S MESSAGE (CONTINUED)

MIMR was in the spotlight several times this year for ground-breaking research publications.

Research led by Drs Anthony Sadler and Aaron Irving, members of my team in the Centre for Cancer Research, was published in the top rating journal *Immunity* in May. Our discovery reported a way to block infection from a range of viruses, including the agent of the common cold, rhinovirus, another agent of respiratory infection, adenovirus, and the human herpes simplex virus 1.

Director of the Centre for Innate Immunity and Infectious Diseases (CIIID), Professor Paul Hertzog, was joint lead author of a publication with Dr Belinda Parker, Peter MacCallum Cancer Centre, in the prestigious journal *Nature Medicine* in July.

They discovered an immune signal in breast cancer cells that regulates metastasis. This new process could be targeted with an existing treatment to complement current therapy and wipe out cancerous cells that spread to the bone.

In October, research by Associate Professor Brendan Jenkins' team in CIIID, including PhD student Hazel Yuet Tye, was published in another top rating journal, Cancer Cell.

The team discovered that they may be able to block the spread and growth of stomach tumours. They found that a gene that creates a protein called Toll-like receptor 2 (TLR2), is over-produced in the stomachs of gastric cancer patients, and identified why this happens.

The Institute was very successful in attracting National Health and Medical Research Council (NHMRC) funding this year, with a success rate of 31 per cent for project grants.

There were also a number of fellowships awarded, in particular to Dr Tim Moss and Associate Professor Caroline Gargett, who broke into the prestigious NHMRC Fellowship system with the award of Senior Research Fellowships.

Success was also notable for MIMR early career researchers, with three awarded NHMRC Biomedical Fellowships and many awarded their first grants as Chief Investigator A. This resulted in more than $10 million of NHMRC funding being brought into the Institute.

This success was no doubt aided by the rigorous grant review systems that were introduced by MIMR a number of years ago and that have now been expanded Faculty wide.

Our annual Ron Evans Golf Day was a resounding success in raising vital funds for our bowel cancer research programs. More than 100 golfers took part in the event at the Royal Melbourne Golf Club, to honour the memory of Ron Evans AM. My thanks go to the Evans family for their continuing generous support of this special event.

We are also grateful to have had the ongoing support of our Patrons Club members in 2012. In particular, the contribution of Patrons Club Chairman and long time MIMR supporter, Robert Smorgon AM, has been invaluable both through his philanthropic support and his involvement in the organisation over the years.

PROFESSOR BRYAN WILLIAMS
INSTITUTE DIRECTOR

CHAIRMAN'S MESSAGE

CHAIRMAN'S MESSAGE

As Chairman of the Advisory Board of the Monash Institute of Medical Research, it has been a pleasure to be involved in the achievements of the Institute over the past year.

I would like to take this opportunity to congratulate all MIMR researchers on their discoveries and funding successes.

Over the past few years, the issue of the lack of medical research funding, with continued threats of cutbacks, has been consistently in the news.

Late in 2011, the Federal Government announced a strategic review of health and medical research in Australia, chaired by Mr Simon McKeon, AO.

The Advisory Board made the following submission to the McKeon Review:

"Our experience in the commercial sector and understanding of the challenges of the research sector has prompted the following comments.

The current funding models applied to the research sector compromise the effectiveness of funding and the capacity of the research sector to operate effectively over the long term.

Because funding is short term, long term stability of projects is disrupted. There is consequent difficulty in encouraging graduates, postgraduates and early career researchers to choose medical research as a profession. It makes it difficult to retain these people of talent and vocation to fulfil outcomes which in most cases are achieved over the long term.

Researchers are typically funded on one year cycles and are required to apply individually for the grants necessary to fund their salaries. This is very time and capacity consuming as a 20% success rate is seen as acceptable despite the fact that the majority of submissions are deemed worthy of funding by NHMRC.

This success rate needs to be much higher if we are to gain more productivity from our researchers. (Studies have shown that 35% minimum is necessary to create effective research outputs.)

We recommend funding should be over a period of a minimum of 5 years to enable the appropriate translation to benefit patients and provide the continuity essential to achieve successful health outcomes.

Our concern is not just about money - it is about the effective use of Government funding, the efficiency of research and the strengthening of the sector by attracting and retaining the most talented and highly motivated young research people.

We believe the current model is compromised by the uncertainty of continuity, which makes effective planning very difficult.

A change to the model to address these issues would be a very effective contribution to better outcomes across the medical research sector and better long term outcomes for health."

The Review Panel delivered its report to the Minister for Health in February 2013. We hope that our submission, along with the many others from Australia's medical research community, will be taken into account by the Federal Government and that the recommendations of the Review Panel will be seriously considered.

On behalf of the Members of the Advisory Board, I would like to thank Institute Director Bryan Williams and the Centre Directors, as well as all researchers, students and staff, for their endeavours in 2012.

GRAEME WISE

CHAIRMAN
MONASH INSTITUTE OF MEDICAL RESEARCH ADVISORY BOARD

GOVERNANCE

MIMR Advisory Board

MIMR ADVISORY BOARD

CHAIR: MR GRAEME WISE

Chairman:
Adidem Group

Founder and Patron:
Big Issue street newspaper

MS BARBARA CROOK

Chief Executive Officer:
Taxpayers Australia Inc and Superannuation Australia

Research Committee Member:
Taxpayers' Research Foundation Ltd

Board Member:
Monash University Medical Foundation

Board Member:
MIMR Foundation

PROFESSOR ROSS COPPEL

Senior Deputy Dean and Director of Research:
Monash University, Faculty of Medicine, Nursing and Health Sciences

PROFESSOR PAUL HERTZOG

Deputy Director:
Monash Institute of Medical Research

Director:
Centre for Innate Immunity and Infectious Diseases, Monash Institute of Medical Research

PROFESSOR IAN SMITH

Pro-Vice Chancellor:
(Research and Research Infrastructure)
Monash University

Board Member:
Auspep Pty Ltd

Board Member:
Victorian Endowment for Science, Knowledge and Innovation (VESKI)

MR ROBERT SMORGON AM

Director:
Escor Group

ADJUNCT PROFESSOR ADRIAN WALKER

Trustee:
MIMR Foundation

PROFESSOR BRYAN WILLIAMS

Director:
Monash Institute of Medical Research

Director:
Centre for Cancer Research, Monash Institute of Medical Research

Director and Chairman:
MEI Pharma

Australian Director:
Pacific Edge Pty Ltd

MS SUE WILLIAMSON

Tax Partner:
Ernst & Young Law Pty Ltd

Senior Fellow:
University of Melbourne

PROFESSOR CHRISTINA MITCHELL

Dean:
Monash University, Faculty of Medicine, Nursing and Health Sciences

RESEARCH

Centre for Cancer Research

Centre for Innate Immunity and Infectious Diseases

Centre for Reproduction and Development

The Ritchie Centre

CENTRE FOR CANCER RESEARCH

CENTRE DIRECTOR: Professor Bryan Williams
RESEARCH GROUP LEADERS: Associate Professor Greg Hannigan, Associate Professor Terry Johns, Professor Neil Watkins, Dr Elizabeth Williams
ADJUNCT SENIOR SCIENTISTS: Dr Jason Lickliter, Dr Ben Markman, Professor David Ashley, Associate Professor Vinod Ganju, Associate Professor Elizabeth Algar

Scientists in the Centre for Cancer Research are interested in the molecular and cellular basis of cancer, and how a greater understanding of these processes can help to identify better treatments.

In 2012, the Centre recruited several key clinician researchers, with the goal of integrating preclinical and clinical research activities to maximise our translational impact.

The Phase I Clinical Trials Unit, headed by Dr Jason Lickliter, initiated five Phase I/II trials in 2012, and is actively seeking new studies to increase our activity in 2013. A/Prof Vinod Ganju and Prof Neil Watkins have also begun an investigator-initiated Phase II trial of a new drug-delivery particle technology, developed at Monash University by Dr Tracey Brown in association with Alchemia.

In addition, Prof Watkins has worked to increase our engagement with Monash Health clinical programs. This work has led to the establishment of a Paediatric Cancer Tumour Bank at Monash Medical Centre, in collaboration with Dr Beena Kumar in the Department of Pathology, and Mr Andrew Danks, Chairman of the Department of Neurosurgery.

Working with Prof David Ashley from Deakin University, and the Children's Cancer Centre at Monash Medical Centre, we are now active participants in two Phase I clinical trials in children's brain tumours.

As part of the Centre's interest in children's cancer, we have also been successful in expanding the Australian and New Zealand Children's Haematology and Oncology Group (ANZCHOG) program, with collaborative links to all the children's cancer centres in Australia.

Several scientists in the Centre were awarded funding from the NHMRC for their research in 2012. In 2012 A/Prof Terry Johns received $1million from the Cure for Life Foundation to fund his work on the development of new therapeutic strategies for the treatment of brain cancer.

The donation was presented at a special event in Parliament House, Canberra, which also launched the Brain Cancer Discovery Collaborative (BCDC). A/Prof Johns is Director of the BCDC, which aims to improve brain cancer research collaboration and streamline the path to a potential cure.

Prof Watkins' laboratory was successful in obtaining NHMRC project grant support to the value of $424,139, commencing in 2013, to study the molecular basis of Hedgehog signalling in small cell lung cancer.

CENTRE FOR CANCER RESEARCH (CONTINUED)

Dr Anthony Sadler also received a project grant for 2013, valued at $440,047, to investigate antiviral proteins in epithelial cells.

Dr Howard Yim was awarded an NHMRC Australia-China Exchange Fellowship to start in 2013 for his work on understanding the mechanism of development of inflammatory bowel diseases and cancers.

Scientists in the Centre were also successful in their applications to other funding bodies in 2012. Dr Jason Cain, working with Prof Neil Watkins, received an Ursini research grant for his work on the development of a new biomarker of Hedgehog pathway activity in osteosarcoma, which also supports a Phase I Clinical Trial of the Hedgehog pathway inhibitor LDE225 (Novartis) in collaboration with the Peter MacCallum Cancer Centre.

Three PhD students from the Centre, Sanja Coso, Anton Kolosov and Renaud Quantin, successfully graduated in 2012. Dr Aaron Irving was awarded the Sidney & Joan Pestka Post-Graduate Award for Excellence in Interferon Research at the 2012 Joint Meeting of the International Cytokine Society (ICS) and the International Society for Interferon and Cytokine Research (ISICR), which took place in Geneva, Switzerland, in September.

This prize is awarded annually to a postdoctoral fellow for interferon-related research, and was presented to Dr Irving for his work with Dr Anthony Sadler and Prof Bryan Williams. Their work was published in the prestigious journal *Immunity* early in 2012.

Dr Howard Yim and Ms Yu Dou were awarded 2012 Milstein Travel Awards by ISICR to attend the ISICR/ICS joint meeting.

Dr Michael Gantier received the 2012 Outstanding Young Investigator Award from the RNA Network of Australia scientific interest group, Australian Society for Biochemistry and Molecular Biology. He was also awarded a Harold Mitchell Postdoctoral Travelling Fellowship in 2012.

RESEARCH HIGHLIGHTS

Irving AT, Wang D, Vasilevski O, Latchoumanin O, Kozer N, Clayton AHA, Szczepny A, Morimoto H, Xu D, Williams BRG, Sadler AJ (2012) Regulation of actin dynamics by protein kinase R control of gelsolin enforces basal innate immune defense. *Immunity* 36:795-806.

Published in the prestigious journal *Immunity*, Dr Sadler's team found that an important antiviral protein called PKR regulates the cytoskeleton in order to prevent viruses from gaining entry into normal cells. This work identifies a novel mechanism by which cells in the airway, gut and other organs can change shape in order to prevent viral infection.

Using a unique mouse model developed by Dr Anette Szczepny in Prof Watkins' laboratory, this process was identified as one of the primary viral defence mechanisms in the lung, with significant implications for how new therapies could be developed to prevent infections such as influenza.

Gantier MP, Stunden HJ, McCoy CE, Behlke MA, Wang D, Kaparakis-Liaskos M, Sarvestani ST, Yang YH, Xu D, Corr SC, Morand EF, Williams BRG (2012) A miR-19 regulon that controls NF-κB signaling. *Nucleic Acids Res* 40:8048-8058.

Dr Gantier and his team focus on microRNAs (miRNAs), a newly defined type of cellular messenger that can influence the activity of large numbers of protein-coding genes to coordinate cell function. In this work, Prof Williams' laboratory showed that an important receptor in the immune response, known as the "Toll-like" receptor family, is tightly regulated by miRNAs.

One of these, miR-19b, mimics and exacerbates the inflammatory activation of rheumatoid arthritis primary fibroblast-like synoviocytes, demonstrating its physiological importance in the pathology of this disease. The study shows that miRNAs play a critical role in the pathogenesis of inflammatory disease.

Greenall SA, Gherardi E, Liu Z, Donoghue JF, Vitali AA, Li Q, Murphy R, Iamele L, Scott AM, Johns TG (2012) Non-agonistic bivalent antibodies that promote c-MET degradation and inhibit tumor growth and others specific for tumor related c-MET. *PLoS One* 7:e34658.

CENTRE FOR CANCER RESEARCH (CONTINUED)

A/Prof Johns and his research team study the c-MET receptor, an important signalling protein that drives the growth and proliferation of many types of cancer. Although an attractive therapeutic target, generating monoclonal antibodies to block c-MET function has been difficult because of its unique structure.

In collaboration with the Ludwig Institute for Cancer Research, A/Prof Johns' group identified a new antibody that can inactivate c-MET in a tumour-specific manner.

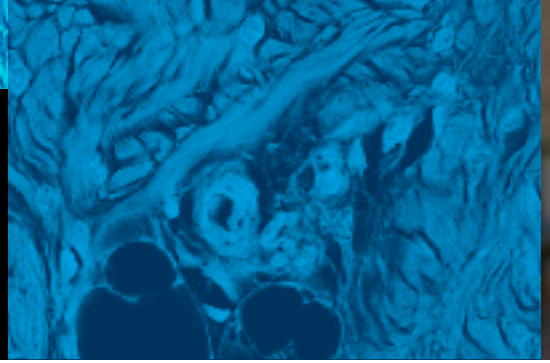
In preclinical models, this antibody was able to slow down the growth and migration of ovarian and lung cancer cells, suggesting that this new antibody may have promise as a new therapeutic agent in cancers for which no effective treatment currently exists.

Dr Williams' team study the role of the lymphatic system in promoting the spread of prostate cancer. This is of critical importance for patients, since the spread of cancer beyond the prostate is incurable, and represents a major unmet clinical need in men's health.

Published in the high-profile journal *Plos One*, Dr Williams used cutting-edge imaging technologies at MIMR to show how signals from prostate cancer cells can induce the formation of new lymphatic channels, thus identifying a potential new therapeutic target for preventing prostate cancer metastasis.

Coso S, Zeng Y, Opeskin K, Williams ED (2012) Vascular endothelial growth factor receptor-3 directly interacts with phosphatidylinositol 3-kinase to regulate lymphangiogenesis. *PLoS One* 7:e39558.

CENTRE FOR INNATE IMMUNITY AND INFECTIOUS DISEASES



CENTRE DIRECTOR: Professor Paul Hertzog

RESEARCH GROUP LEADERS: Professor Phil Bardin, Associate Professor Richard Ferrero, Associate Professor Brendan Jenkins, Dr Ashley Mansell, Dr Carl Sprung

The Centre for Innate Immunity and Infectious Diseases researches the molecular regulation of the innate immune response, which determines the body's first response to infection by pathogens and other environmental stimuli.

The innate immune system initiates the inflammatory response and can modulate the development of some cancers.

By understanding the molecular pathways that regulate these processes as well as their normal, physiological roles, researchers working in the Centre aim to develop new approaches for preventing, diagnosing and treating disease.

The research undertaken within the Centre requires considerable funding to support salaries, student scholarships, consumables and equipment.

In a climate of tough government budget constraints where only 21 per cent of applications were funded, 2012 was a very good year for the Centre, with nearly 30 per cent of applications to the NHMRC and ARC successful. This will underpin the Centre's research efforts for the next three years.

The Molecular Immunity Laboratory, led by Prof Paul Hertzog, received two grants from the NHMRC to support their investigations into the role of the innate immune system in two important issues of female health – preventing reproductive tract infections and suppressing breast cancer metastases.

One project, studying the role of a novel cytokine in regulating immune responses in the female reproductive tract, has the potential to develop new ways of preventing and predicting reproductive tract infections such as HIV, HPV, HSV and chlamydia, which represent major health and socioeconomic problems worldwide.

The second project also supports novel avenues of study into how gene signatures from the innate immune system can predict whether breast cancer will spread to bones. This opens the door for development of new treatments for metastatic breast cancer and identification of women most likely to respond.

The Cytokine Signalling Laboratory, led by A/Prof Brendan Jenkins, and the Gastrointestinal Infection and Inflammation Laboratory, led by A/Prof Richard Ferrero, were awarded a grant to investigate the regulation of inflammatory factors in gastric disease.

This grant exemplifies the world-class collaborations fostered by the Centre and brings together the expertise of A/Prof Ferrero's group in the disease-associated roles of *Helicobacter pylori*, the bacterium causing stomach cancer and peptic ulcer disease, with that of A/Prof Jenkins' group in the role of cytokines in promoting cancer of the lung and stomach, the two most common causes of cancer-related deaths worldwide.

CENTRE FOR INNATE IMMUNITY AND INFECTIOUS DISEASES (CONTINUED)

A/Prof Jenkins had several opportunities to promote his research internationally, with invitations to speak at the Keystone Symposium on The Biology of Cytokines in Colorado, the 4th Asia-Pacific Gasteroesophageal Cancer Congress in Singapore and the 71st Annual Meeting of the Japanese Cancer Association in Sapporo.

Dr Ashley Mansell's Toll-like Receptor Signalling Laboratory researches the role of the pattern recognition receptor signalling pathways in human innate immunity. These diverse projects provide a structural analysis of key signalling molecules involved in generating the inflammatory response to infections, thus providing potential therapeutic treatments.

In conjunction with A/Prof Mark Hedger (Centre for Reproduction and Development), the laboratory also investigates the role of Toll-like receptors in male reproduction and sperm development.

These studies further highlight the pervasive role of innate immunity in multiple facets of human health. Dr Mansell was also invited to speak at two international conferences in Switzerland and the USA.

The DNA Repair and Genomics Laboratory, led by Dr Carl Sprung, is funded by grants from the NHMRC, NIH and the Australian Government Department of Health and Ageing/Cancer Australia to support research to improve cancer treatment.

Investigation of the molecular mechanisms underlying the responses to DNA damage caused by radiation, such as that received during cancer radiotherapy, and the development of novel radiotherapy strategies, including those that make use of the local Australian Synchrotron, are major areas of interest.

The Respiratory Infection and Inflammation Laboratory, headed by Prof Phil Bardin, investigates the role of virus infections (rhinovirus and respiratory syncytial virus) in lung diseases. In collaboration with Prof David Jans and Dr Reena Ghildyal at Monash University, Prof Bardin's group was awarded an NHMRC grant to examine new therapeutic targets for respiratory syncytial virus, a major cause of respiratory infection-related hospitalisations for babies.

Recent research by Drs Belinda Thomas and Michelle Tate has also examined deficient immune responses in asthma. This has been found to be linked to a key pro-inflammatory and pro-fibrotic molecule. Prof Bardin's research involves many collaborations with clinical researchers and is funded by NHMRC, Asthma Victoria and Lung & Sleep Medicine grants.

RESEARCH HIGHLIGHTS

Bidwell BN, Slaney CY, Withana NP, Forster S, Cao Y, Loi S, Andrews D, Mikeska T, Mangan NE, Samarajiwa SA, de Weerd NA, Gould J, Argani P, Möller A, Smyth MJ, Anderson RL, Hertzog PJ, Parker BS (2012) Silencing of Irf7 pathways in breast cancer cells promotes bone metastasis through immune escape. *Nat Med* 18:1224–1231.

Prof Paul Hertzog's group found an unexpected link between the innate immune system, which is usually associated with protection from infection, and the response to breast cancer metastasis. Breast cancer is the leading cause of cancer death for women worldwide and metastasis is a key factor in determining how long breast cancer patients will survive.

To investigate how breast cancers spread, Prof Hertzog's group, together with colleagues at the Peter MacCallum Cancer Centre, headed by Dr Belinda Parker, compared genes expressed in primary and metastatic tumour cells. They found that hundreds of genes suppressed in bone metastases originating from breast tumours were targeted by the transcription factor Irf7.

The researchers found that restoring IRF7 activity in tumour cells or administering interferon to activate IRF7 led to reduced bone metastases and increased survival time.

The team confirmed that their studies were clinically relevant in over 800 patients in which high expression of Irf7-regulated genes in primary tumours was associated with prolonged bone metastasis-free survival.

The collaborative study between MIMR and the Peter MacCallum Cancer Centre indicates that Irf7-driven suppression of metastasis relies on interferon signalling to host immune cells and that suppressing this innate immune pathway, intrinsic to breast cancer cells, restricts immunosurveillance to enable metastasis.

This pivotal manuscript, published in *Nature Medicine*, suggests that next-generation breast cancer therapies against metastasis may be improved by including interferon.

Tye H, Kennedy CL, Najdovska M, McLeod L, McCormack W, Hughes N, Dev A, Sievert W, Ooi CH, Ishikawa TO, Oshima H, Bhathal PS, Parker AE, Oshima M, Tan P, Jenkins BJ (2012) STAT3-driven upregulation of TLR2 promotes gastric tumorigenesis independent of tumor inflammation. *Cancer Cell* 22:466–478.

CENTRE FOR INNATE IMMUNITY AND INFECTIOUS DISEASES (CONTINUED)

A/Prof Brendan Jenkins and his team may have discovered a way of blocking stomach tumours from growing and spreading.

Stomach, or gastric, cancer is the second most lethal cancer in the world, and being one of the most aggressive forms of cancer, it is also placed among the world's top five cancers with the lowest survival rates.

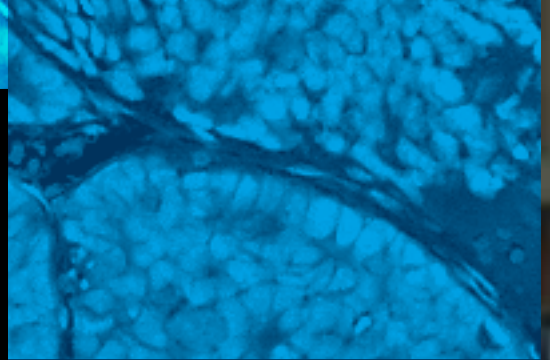
In a world first, A/Prof Jenkins and his team have identified that a gene that creates a protein called Toll-like receptor 2 (TLR2) is over-produced in the stomachs of gastric cancer patients. They have also identified why this happens.

The team has also demonstrated that TLR2 promotes the growth of gastric cancer tumour cells, and by using an antibody can block the actions of TLR2, thus preventing further tumour growth and metastasis.

The main issue with stomach cancer is that it is a very aggressive disease and is often only detected at an advanced stage, where sufferers are restricted to harsh treatments such as chemotherapy, radiotherapy and surgical resection, which can have dire consequences on the patients' quality of life and long-term survival rates.

This therefore has created a strong need for new, next-generation therapeutics for gastric cancer. A/Prof Jenkins' findings now create the potential for personalised therapeutic treatment. They also highlight the need and pave the way for early detection.

CENTRE FOR REPRODUCTION AND DEVELOPMENT



CENTRE DIRECTOR: Professor Justin St John

RESEARCH GROUP LEADERS: Professor David de Kretser, Associate Professor Mark Hedger, Dr Ursula Manuelpillai, Dr Patrick Western, Dr Stefan White, Dr Matthew McKenzie

In the last three years, the Centre for Reproduction and Development has changed its research direction, which now focuses on how human disease is propagated and transmitted using innovative reproductive, developmental and stem cell biology approaches.

The change in research direction has been rewarded with an ARC Future Fellowship to Dr Matthew McKenzie and four NHMRC grants to investigators within the Centre. The future of this Centre was also recognised by Monash University, with Laboratory Group Heads Dr McKenzie and Dr Stefan White being invited to participate in the Monash Research Accelerator Program, which mentors and supports future scientific leaders.

As leader of the Molecular Basis of Mitochondrial Disease Research Group, Dr McKenzie and his team aim to define the mechanisms that underlie defects in mitochondrial function that cause disease in both children and adults.

His ARC Future Fellowship will enable him to use cells from patients with mitochondrial disorders to generate stem cell models to provide new insights into mitochondrial disease pathology and develop therapeutic approaches.

The Mitochondrial Genetics Group is led by Prof Justin St John. With his current NHMRC grant, he has made significant progress in developing stem cell models of mitochondrial DNA disease and in 2012 was awarded a further NHMRC grant to generate mini-pig models of mitochondrial disease.

This grant will give him the opportunity to map mitochondrial DNA mutations during development and determine when these mutations first impact on the fetus and the child.

Dr Patrick Western was also successful with the award of two NHMRC project grants that will start in January 2013 and leads the Germ Cell Development Group. Throughout the year, he has been developing his genetic and epigenetic models of early development.

With these new grants he will specifically concentrate on how early sperm and oocytes pass all of an individual's genetic and epigenetic information to his or her children.

This has important implications for the onset of many diseases including diabetes. He is also studying how testis tumours form as a consequence of disrupted germ cell formation.

Dr Stefan White, leader of the Biomedical Genomics Group, concentrates his research on the effect of DNA variation in disease. He has a particular interest in complex copy number variation, as well as the effect of rare, non-coding variants on gene regulation. He has been using different genetic and epigenetic approaches to study induced pluripotent stem cells from patients with mitochondrial disorders, a project funded by the NHMRC.

CENTRE FOR REPRODUCTION AND DEVELOPMENT (CONTINUED)

In 2012 he was also awarded a Monash IVF grant to study specific epigenetic markers associated with placental disorders that affect birth. This year he was invited to give the prestigious Visser Lecture in Rotterdam in the Netherlands.

Dr Ursula Manuelpillai, who leads the Amnion Stem Cell Group, has made significant contributions to the characterisation of amnion stem cells and their use for transplantation purposes.

Through her NHMRC-funded project, she has shown that placental derived amniotic epithelial cells have stem cell-like properties and has generated liver-like cells from these cells. In order to improve the liver-specific functions carried out by these cells, she is identifying the molecular 'blocks' that need to be removed before these liver-like cells can function properly.

She has also shown that the amnion cells have anti-inflammatory and anti-fibrotic properties. Dr Manuelpillai continues as a member of the Monash Researcher Accelerator Program.

The Activin Follistatin Biology and Inflammation Group is jointly led by Prof David de Kretser and A/Prof Mark Hedger.

In 2012 Prof de Kretser was awarded an NHMRC project grant to continue his work exploring the roles of the activins and follistatin in reperfusion injury related to transplants of the lung and kidney. He has also continued to investigate the roles of the activins in inflammation and tissue repair, especially fibrosis.

A/Prof Mark Hedger's research examines the interaction between male reproduction and immunity, and the consequences of this interaction for fertility, reproductive tract infections and men's health in general.

A large part of his research involves the investigation of a group of proteins found in the male reproductive tract that control inflammation and immune responses, called activins, and their evaluation as potential diagnostics and therapeutic targets.

Of note this year, A/Prof Hedger has demonstrated that activin and follistatin play an interactive role in controlling the functions of different regions of the epididymis and vas deferens, which may help to explain some developmental abnormalities of the male reproductive tract, and how the sperm are protected from the immune system once they are released from the immune privilege of the testis environment. A/Prof Hedger is an NHMRC Senior Research Fellow and has two active NHMRC grants that continue to support this line of research.

RESEARCH HIGHLIGHTS

Kelly RD, Mahmud A, McKenzie M, Trounce IA, St John JC (2012) Mitochondrial DNA copy number is regulated in a tissue specific manner by DNA methylation of the nuclear-encoded DNA polymerase gamma A. *Nucleic Acids Res* 40:10124-10138.

A paper by Prof Justin St John's team, published in *Nucleic Acids Research,* is the first to demonstrate how DNA methylation of a nuclear-encoded gene, DNA Polymerase Gamma A *(PolgA)*, regulates the replication of the mitochondrial genome, which is located within another compartment of the cell.

Most importantly, the paper explains how DNA methylation of *PolgA* takes place in a tissue-specific manner.

This is important as different cell types have different populations of mitochondrial DNA copy number.

This enables different cell types to generate sufficient energy to undertake their specific functions. Consequently, high energy requiring cells such as muscle, heart and liver cells have high numbers of mitochondrial DNA copy, high levels of DNA methylation to *PolgA* and high levels of expression of *PolgA*, whilst the very early-undifferentiated cells, which give rise to these cell types, have very low levels of DNA methylation and expression of *PolgA*, and very few copies of mitochondrial DNA.

In this paper, the team also demonstrated that the mitochondrial genome is not DNA methylated, contrary to a finding that has recently been published. This team's studies open the way to further understanding how mitochondrial DNA copy number is regulated in a cell-specific manner and how alterations to DNA methylation of *PolgA* may account for some individuals suffering from mitochondrial disease as they have too few copies of mitochondrial DNA in certain tissues.

CENTRE FOR REPRODUCTION AND DEVELOPMENT (CONTINUED)

Cantsilieris S, White SJ (2013) Correlating multiallelic copy number polymorphisms with disease susceptibility. *Human Mutat* 34:1-13.

The human genome contains a significant amount of sequence variation, from single nucleotide polymorphisms to large stretches of DNA that may be present in multiple copies.

Several such loci are variable in different individuals, and a number of studies have looked for associations between the copy number of genes within these regions and disease susceptibility and/or severity. Although there have been reports associating specific regions with disease, follow-up replication in independent cohorts has failed to reproduce a number of these associations.

In this report, Dr White and his team show that technical problems with commonly used methodologies are the likely reason for at least some of the unconfirmed associations.

The team describes an assay that it has developed, which can be used to accurately genotype regions that are present in a range of copy numbers. These findings will improve our understanding of the link between these complex genomic sequences and disease.

THE RITCHIE CENTRE

CENTRE DIRECTOR: Professor Euan Wallace

DEPUTY DIRECTORS: Associate Professor Caroline Gargett, Professor Stuart Hooper, Professor Rosemary Horne, Professor Graham Jenkin

RESEARCH GROUP LEADERS: Associate Professor Caroline Gargett, Professor Stuart Hooper, Professor Rosemary Horne, Professor Graham Jenkin, Associate Professor David Walker

The Ritchie Centre, at Monash Institute of Medical Research, is the principal research centre of the Monash University Department of Obstetrics and Gynaecology, and is a major research partner of the Department of Paediatrics within the Southern Clinical School and of Monash Women's Services at Monash Health.

The Centre's mission is to improve the health of women, infants and children through innovative research. At the beginning of 2010, The Ritchie Centre underwent significant expansion under the auspices of its new Director, Prof Euan Wallace.

This included the recruitment of Profs Graham Jenkin, Stuart Hooper and David Walker and their research groups to the Centre and, in 2012, the formal fusion with the Centre for Women's Health Research.

As a result, The Ritchie Centre now has over 150 research staff and students; including fetal physiologists, sleep physiologists, immunologists, stem cell biologists, neonatologists, paediatricians, obstetricians, gynaecologists, reproductive biologists and radiologists.

It has translational research partnerships with Victoria's largest health service, Monash Health, through Monash Women's Services, Monash IVF, Monash Children's Hospital, Monash Newborn and the Melbourne Children's Sleep Centre, as well as The Royal Women's Hospital and The Royal Children's Hospital, Melbourne.

The Ritchie Centre offers a unique setting where research advances can be rapidly applied for the benefit of women, seriously ill infants and children. This has led to translation of its basic research into clinical trials and clinical practice.

Securing research funding remains a major focus of the Centre's scientists and their continuing success is largely responsible for the success of the Centre. In 2012, Ritchie Centre researchers were successful in securing significant new funding in excess of $10 million.

This included seven new NHMRC Project Grants, an NHMRC Development Grant, NHMRC Senior Research Fellowships (to A/Prof Tim Moss and A/Prof Caroline Gargett), as well as a Peter Doherty Australian Biomedical Fellowship to Dr Sarah Biggs.

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Research Foundation also awarded the Ella Macknight Memorial Scholarship to Dr Kjiana Schwab and the Glyn White Research Fellowship to new recruit Dr Mary Tolcos.

THE RITCHIE CENTRE (CONTINUED)

A/Prof Tim Moss was awarded an ARC Linkage Grant, with industry partner Fisher & Paykel Healthcare. Significant industry funding also continues to be provided by the Australian-based stem cell company, Mesoblast, for preclinical and clinical trials directed at repair and replacement of damaged and diseased spinal discs, and by Cell Care Australia for development and application of cord blood and placental tissue banking.

The Ritchie Centre has also been successful at attracting significant philanthropic funding. This includes funding from the Cerebral Palsy Alliance to further research into mechanisms that cause brain injury in premature babies, and the Scottish Cot Death Trust and the Clive and Vera Ramaciotti Foundation for research into sleeping position and how it affects brain development in preterm infants.

Dr Sarah Biggs received the Rod Pierce Grant in Aid award from the Australasian Sleep Association, which assists early career researchers to develop an independent line of research. Two grants were also awarded by the Financial Markets Foundation for Children; one to Dr Graeme Polglase to study how umbilical cord clamping at birth affects cardiac function and one to Dr Mary Tolcos to study the mechanisms of brain injury in growth-restricted infants.

Other funding to our talented research team included support from: ANZ Trustees, Collier Charitable Fund, HeartKids Australia, National Heart Foundation, the Lynne Quayle Charitable Trust, The Jack Brockoff Foundation, 5Point Foundation, The Marian & EH Flack Trust, Inner Wheel Australia, Advanced Manufacturing CRC, SIDS and Kids Victoria, and the Stillbirth Foundation Australia.

The Ritchie Centre's "Blair Ritchie bequest" continues to allow us to support young scientists, purchase essential equipment and run innovative experiments. Government funding is never sufficient to support the Centre's research activity. It is only through the generosity of individuals and philanthropic donors that the Centre continues to develop and grow.

In addition to new research funding, Ritchie scientists have received numerous awards. Prof Stuart Hooper's research program was included as one of the NHMRC's 2012 "Ten of the Best" Research Projects that were featured by the NHMRC and the Federal Minister for Health, the Hon Tanya Plibersek, MP. Dr James Deane was awarded the Society for Reproductive Biology Award for best presentation at the AHMRC Symposium and Dr Stephanie Yiallourou won the New Investigator Award at the International Paediatric Sleep Association meeting.

The pioneering non-invasive fetal cardiac surgery research led by Drs Andrew Edwards and Flora Wong swept up a number of awards at national and international meetings, including the annual meetings of the International Society for Ultrasound in Obstetrics and Gynaecology and of the Australian Society for Ultrasound in Medicine and the Paediatric and Adult Interventional Cardiac Symposium in Chicago.

Ritchie Centre PhD students have also excelled in 2012. For the second year in a row, a Ritchie Centre PhD student has won the Monash University Mollie Holman Doctoral Medal. This prestigious medal was awarded to Dr Georg Schmoelzer for the best PhD thesis in the Faculty of Medicine, Nursing and Health Sciences at Monash University.

Ritchie Centre students also did well at the annual congress of the Perinatal Society of Australia and New Zealand (PSANZ), winning the New Investigator Awards for best presentation in the categories of Science (Anzari Atik) and Neonatology (Karinna Fyfe), while James Aridas won both the best presentation by an "early" PhD student and the Cerebral Palsy Alliance (CPA) award; with Samantha Barton receiving the CPA's special commendation prize.

Karinna Fyfe also took out the New Investigator Award at the Australasian Sleep Association meeting and Lauren Nisbet won the Childhood Sleep Disorders and Development Section Investigator Award at the Associated Professional Sleep Societies (USA).

Dr Nadine Brew received the prestigious PSANZ David Henderson-Smart award and PhD student, Dr Sasmira Bhatt, was awarded the prize for the best presentation at the 2012 RANZCOG annual congress.

PhD student, Kristina Sobotka, was awarded a very prestigious prize at the European Society for Paediatric Research annual congress for the best paper by an early career researcher that was published in the Journal *Pediatric Research* in 2011.

The 2012 Ritchie Centre's Colloquium, held in September, focused on the Women's Health theme, and particularly on Pelvic Organ Prolapse (POP). One in four Australian women have at least one symptom of POP, with urinary incontinence being the most common. Half of all women over 50 who have had children will suffer urinary incontinence, mainly from POP, which is the descent or herniation of the pelvic organs (bladder, bowel and/or uterus) into the vagina.

THE RITCHIE CENTRE (CONTINUED)

The Colloquium annual public forum entitled “Childbirth and the pelvic floor – new solutions to age-old problems”, featured keynote speakers that included celebrity health specialist Dr Sally Cockburn (Dr Feelgood, 3AW), Dr Anna Rosamilia (Monash University), urogynaecologists Profs Bob Freeman and Peter Dwyer, and the Ritchie Centre’s A/Prof Caroline Gargett.

Physiotherapist Ms Janetta Webb and the CEO of the Continence Foundation of Australia, Mr Barry Cahill, also contributed to a highly interactive panel discussion. Almost 200 people from the healthcare industry and general public came to hear more about POP and incontinence. The two-hour forum at RMIT’s Storey Hall was designed to remove the stigma associated with POP and incontinence, and to discuss new treatments and explore preventative methods.

The Ritchie Centre’s annual Kaarene Fitzgerald Public Lecture this year focused on the “bed-sharing” debate and whether it is safe for the baby. Invited speakers featured the South Australian forensic pathologist Dr Roger Bayard, paediatrician A/Prof Harriet Hiscock and the Centre’s own Prof Rosemary Horne.

Prof Horne said that “bed-sharing is always a hotly contested debate, but, overall, parents need to know that the safest place to sleep their baby is in a separate cot/bassinet next to their own bed. Coroners and pathologists in both Victoria and South Australia have reported a disproportionate number of infants found dead in bed-sharing situations, and this has even happened in hospital”.

In late 2011, the Ritchie Centre recruited Dr Mary Tolcos from the University of Melbourne to join the Centre’s growing research team focused on developmental neuroscience and the mechanisms of perinatal brain injury. Dr Tolcos is currently a Senior Research Fellow and a RANZCOG Glyn White Research Fellow.

Her work focuses on the assessment of brain injury and alterations in critical aspects of brain development (myelination, neurogenesis and gliogenesis). She uses models of prenatal compromise, including intrauterine growth restriction and fetal inflammation. She is now working towards understanding the mechanisms involved in altered brain development and brain injury, with the aim of generating more targeted approaches to neuroprotection in both the developing fetus and newborn infant.

Dr Tolcos currently holds multiple grants, including an NHMRC Project Grant, an Innovative Research Grant from the Cerebral Palsy Alliance Research Foundation and two research grants from the Financial Markets Foundation for Children.

In 2012, the Ritchie Centre also welcomed Dr Miranda Davies-Tuck, who was recruited from the School of Public Health and Preventive Medicine at Monash University. An early career researcher, Dr Davies-Tuck is a highly experienced epidemiologist and was recruited to apply these research skills to the field of fetal and maternal health.

Dr Davies-Tuck is very passionate about improving maternity care for all Australian women and has begun her research at The Ritchie Centre by focusing on ethnic differences in the mode of birth and rates of obstetric interventions among women at Monash Health. She is also involved in research addressing women’s access to maternity services, including home birthing services.

Another 2012 recruit was Dr James Deane, who is applying his epithelial biology knowledge and expertise in mouse models and imaging to study the role of epithelial progenitor cells in endometrial regeneration and gynaecological disease.

RESEARCH HIGHLIGHTS

Murphy SV, Lim R, Heraud P, Cholewa M, Le Gros M, de Jonge MD, Howard DL, Paterson D, McDonald C, Atala A, Jenkin G, Wallace EM (2012) Human amnion epithelial cells induced to express functional cystic fibrosis transmembrane conductance regulator. *PLoS One* 7:e46533.

A paper by recent PhD graduate, Dr Sean Murphy, describing research that could lead to a cure for the debilitating disease, cystic fibrosis, was published in the world’s largest scientific journal, *PLoS One.* This highly respected open-access, online, peer-reviewed journal published >13,700 articles in 2011, covering all disciplines in science and medicine.

Dr Murphy’s paper explores the possibility that placental tissues, normally discarded after birth, may be a promising source of novel stem cells that could be used for the development of a cellular therapy for the treatment of cystic fibrosis.

THE RITCHIE CENTRE (CONTINUED)

Cystic fibrosis remains a leading cause of childhood respiratory morbidity and of premature mortality. Currently, there is no cure for cystic fibrosis. It is a genetic disorder caused by a mutation in a gene encoding the cystic fibrosis transmembrane conductance regulator (CFTR), a transmembrane cAMP-activated ATP-gated anion channel.

CFTR mutations can result in disruption of the flow of ions, such as chloride ions, down their electrochemical gradient in epithelial cells that line the passageways of the lungs, pancreas and other organs. The respiratory consequences of cystic fibrosis include the generation of thick, tenacious and dehydrated mucus, predisposing the individual to repeated, persistent infections.

These repeated and chronic lung infections lead to progressive lung damage and ultimately to premature death. With a cure in mind, Dr Murphy investigated the ability of human amnion epithelial cells (hAECs) to express functional CFTR.

Dr Murphy found that, after culture in Small Airway Growth Medium designed to promote the differentiation of stem cells into lung epithelium, hAECs formed three-dimensional structures that expressed the *CFTR* gene and CFTR protein. He also observed a polarised CFTR distribution on the membrane of cultured hAECs, similar to that observed in polarised airway cells *in vivo*.

Further, hAECs induced to express CFTR, possessed functional iodide/chloride ion channels, indicating the presence of functional CFTR ion channels. These data suggest that hAECs may be a promising source for the development of a cellular therapy for cystic fibrosis.

Yiallourou SR, Sands SA, Walker AM, Horne RSC (2012) Maturation of heart rate and blood pressure variability during sleep in term-born infants. *Sleep* 35:177-186.

A paper by Postdoctoral Research Fellow, Dr Stephanie Yiallourou, was published in the prestigious journal *Sleep* in 2012.

Dr Yiallourou studied heart rate and blood pressure control during sleep in babies up to 6 months of age. Impaired cardiovascular control is thought to be one of the underlying mechanisms leading to sudden infant death syndrome (SIDS), which peaks in incidence at 2-3 months, but the mechanisms were unknown.

Dr Yiallourou's findings demonstrate the developmental changes in cardiovascular control and identify a possible reason for the high SIDS risk period at 2-3 months in healthy babies. She measured heart rate and blood pressure rhythms to quantify how the central nervous system of healthy babies controls heart rate and blood pressure during sleep.

Until this study, no data were available on changes in both heart rate and blood pressure, as it is very difficult to measure an infant's blood pressure continuously in a non-invasive manner. The research team studied 31 healthy babies (16 female and 15 male) from uncomplicated pregnancies over three time periods: 2-4 weeks, 2-3 months and 5-6 months.

At each time point, non-invasive techniques were used to measure brainwave activity, eye movement, muscle tone, breathing rate, heart rate (by electrocardiogram) and blood pressure. Recordings were made during both active and quiet sleep states with the babies lying supine.

In addition, in order to induce a mild cardiovascular stress, 15-degree head-up tilts were performed during both active and quiet sleep states, to look at the heart rate and blood pressure responses.

The main focus of the paper was to characterise how the babies' responses mature over time and to determine whether there were any differences between sleep states, particularly during the age (2-3 months) that corresponds to the peak incidence period of SIDS.

Previously, Dr Yiallourou had found that the blood pressure of normal babies tends to dip at around 2-3 months of age compared to younger or older babies. As heart rate variability increases with age, the ability of the heart to compensate (its ability to adapt and cope) in times of stress also increases (matures) with age.

As SIDS is believed to involve a drop in blood pressure, an immature heart rate control may make an infant more vulnerable to events that result in a loss in blood pressure during the first 3 months of life.

Further, there is a three to four times greater chance of a baby suffering SIDS in a prone position and preterm babies also have an increased risk of SIDS compared to normal babies.

Dr Yiallourou's work has identified that babies have immature cardiovascular control at the age when SIDS risk is greatest. Further studies are still required, however, to elucidate the role of major SIDS risk factors such as the prone sleeping position and preterm birth in the pathway to SIDS.

EDUCATION

Visiting Speakers
MIMR Postgraduate Committee
Community Education and Education Events
Andrology Australia
2012 Graduates

VISITING SPEAKERS

Dr Loana Visan
Nature Immunology

A guide to authors

14/02/12

Professor Luke O'Neill
Inflammation Research Laboratory, Trinity College Dublin, Ireland

Metabolic regulation of inflammasomes and IL1 beta

14/02/12

Dr Connie Wong
Calvin, Phoebe, and Joan Snyder Institute for Infection, Immunity, and Inflammation, University of Calgary, Canada

Functional innervation of hepatic iNKT cells is immunosuppressive following stroke

27/02/12

Dr Edmond Jesudason
The University of Liverpool, UK

The regulation of lung development and its consequence for later disease

01/03/12

Dr Vinod Ganju
Peninsula Oncology Centre, Frankston Private

Neoadjuvant therapy for breast cancer: a platform for translational research

22/03/12

Dr Michael Tavaria
Applied Biosystems

Genetic analysis roadshow: discovery to validation

22/03/12

Professor Philippe Sansonetti
Molecular Microbial Pathogenesis Laboratory, Institut Pasteur, Paris, France

Pathogens and commensals: War and Peace at mucosal surfaces

04/04/12

Dr Tamas Zakar
John Hunter Hospital, Newcastle

Control of gene expression in the fetal membranes by chromatin modifications

11/04/12

Professor Sarah Robertson
The Robinson Institute, University of Adelaide

Sperm-borne microRNA and regulation of endometrial immune function at conception

12/04/12

Dr Camden Lo
MHTP

Monash micro imaging at MHTP: you've got 99 problems but imaging ain't one

13/04/12

Professor Alistair Gunn
Department of Physiology, University of Auckland, New Zealand

The clinical advent of hypothermia in the NICU: trials, tribulations, and triumphs

19/04/12

Dr Vincent Letouzey
Bocage University Hospital, Dijon, France

Development of reinforcement parietal meshes for pelvic organ prolapse

27/04/12

Dr Sampsa Vanhatolo
Pediatric Neurophysiology, Helsinki University Hospital, Finland

Preterm development of brain pathways and their function: from histology to clinical neurophysiology

03/05/12

Professor Peter Currie
Australian Regenerative Medicine Institute (ARMI)

Modelling muscle disease and regeneration in Zebrafish

10/05/12

Professor Geoff Farrell
Australian National University Medical School, Canberra

Not all fat sits easily in the liver: how is inflammation recruited in non-alcoholic steatohepatitis (NASH)?

17/05/12

VISITING SPEAKERS (CONTINUED)

Associate Professor Amanda Spurdle
Molecular Cancer Epidemiology Laboratory, Genetics and Population Health Division, QIMR

The lows and high of endometrial cancer genetics

31/05/12

Dr Jose Maria Polo
Reprogramming and Epigenetics Laboratory, Monash University

Unveiling the reprogramming process

04/06/12

Professor Geoff Lindeman
Stem Cells and Cancer Division, Walter & Eliza Hall Institute

Mammary stem cells and breast cancer - taking cues from steroid hormones

07/06/12

Dr Helen Abud
Department of Anatomy and Developmental Biology, Monash University

Genetic analysis of transcriptional repressors in intestinal stem cells and tumours

21/06/12

Dr Joanne Britto
Melbourne University

Lamination of cortical interneurons - from development to translation based therapies

29/06/12

Dr Caoimhe Nic AntSaoir
Life Technologies

Advances in primary and stem cell culture

06/07/12

Dr Leo Leader
The University of NSW

The effects of maternal stress and anxiety on fetal behaviour and development

13/07/12

Dr Richard Allcock
Genomics Facility, Royal Perth Hospital

Application of large and small-scale targeting strategies for the discovery of diseases associated mutations by Next Generation Sequencing

27/07/12

Dr Lindsea Booth
Howard Florey Institute, Melbourne

Generation and control of renal sympathetic nerve activity in fetal sheep

27/07/12

Dr Alex Swarbrick
Tumour Progression Group, Garvan Institute of Medical Research, UNSW

Transcriptional networks controlling breast cancer heterogeneity

02/08/12

Professor Dan Rurak
University of British Columbia, Canada

A biological mechanism for the increased risk of fetal growth restriction and stillbirth with advancing gestation

06/08/12

Professor Phil Hansbro
Microbiology, Asthma & Airways Research Group, University of Newcastle

Respiratory infections and respiratory disease

09/08/12

Dr Elissa Osborne
Monash IVF

Preimplantation genetic diagnosis at Monash IVF

16/08/12

Mr Phillip Hudson
QIAGEN

Pyrosequencing: a sensitive, rapid and robust method for accurately quantifying methylation levels and mutation screening

21/08/12

Dr Richard Harrison
Bio-rad

Droplet Digital PCR - a breakthrough in genetic analysis

23/08/12

Dr Gemma Alderton
Nature Reviews Cancer

Inside Nature Publishing Group

27/08/12

Dr Reza Haffari
Faculty of IT, Monash University

DriverNet: uncovering the impact of somatic driver mutations on transcriptional networks in cancer

30/08/12

Associate Professor Martin Lackmann
Protein Interaction & Cancer Laboratory, Monash University

Development of a therapeutic antibody targeting oncogenic EphA3

06/09/12

VISITING SPEAKERS (CONTINUED)

Professor Grant Montgomery

Molecular Epidemiology Laboratory, QIMR

Endometriosis susceptibility genes

13/09/12

Professor Christian Doerig

Department of Microbiology, Monash University

Functional kinomics of malaria parasites

20/09/12

Dr Charles Allan

ANZAC Research Institute & University of Sydney

Genetic models dissecting the endocrine control of testicular development

27/09/12

Professor Robin Lovell-Badge

MRC National Institute for Medical Research, UK

Pituitary development and stem cells

01/10/12

Associate Professor Naotsugu Tsuchiya

Laboratory for the Neuronal Basis of Consciousness, School of Psychology and Psychiatry, Monash University

Visual consciousness tracked with direct intracranial recording from early and high-level visual cortices in humans and monkeys

04/10/12

Dr Joseph Boland

Life Technologies

Rapid innovation and flexibility of the PGM and proton sequencers drives the cancer genome research laboratory into the future

05/10/12

Dr Ricky Johnstone

Gene Regulation Laboratory, Peter MacCallum Cancer Centre

Epigenetic therapies for the treatment of cancer

11/10/12

Associate Professor Chris Sobey

Vascular Pharmacology, School of Biomedical Sciences, Monash University

New insights into mechanisms of inflammation in hypertension and stroke

25/10/12

Associate Professor Mimi Tang

Murdoch Children's Research Institute/ Royal Children's Hospital

Oral tolerance induction for the treatment of food allergy

01/11/12

Dr Julie McMullen

Cardiac Hypertrophy Laboratory, Baker IDI

PI3K(p110α)-based therapies improve function of the failing heart

08/11/12

Dr Louise O'Brien

University of Michigan, USA

Perinatal morbidity: does maternal sleep play a role?

23/11/12

Professor Colin Sibley

The University of Manchester, UK

Maternal and fetal health

29/11/12

Dr Yvonne Bordon

Nature Reviews Immunology

From bench to backside: editor's perspective

10/12/12

MIMR POSTGRADUATE COMMITTEE

Dr Georg Schmoelzer, 2012 Mollie Hollman Award winner.

MIMR POSTGRADUATE COMMITTEE: Professor Rosemary Horne, MIMR Postgraduate Committee Chair and Dr Susan Cumming, Education Manager

The MIMR Postgraduate Committee provides support and mentoring for MIMR students and their supervisors, with the aim of ensuring that the progress of each student towards the completion of their degree is as seamless as possible.

The committee is made up of a senior staff member and student representative from each Centre, and meets monthly to review student progress, discuss details of thesis submission format, postdoctoral training opportunities and any other issues arising from the students' postgraduate journeys.

The committee organises the PhD candidature milestones. In 2012, MIMR successfully implemented the University's two new milestones, mid-candidature reviews and pre-submission seminars. These are in addition to the confirmation of candidature, which occurs 9-12 months after commencement.

In addition to organising the University's formal candidature requirements, professional skills workshops and social events are also coordinated through the Postgraduate Committee.

The PhD Induction and welcome barbeque in March, the Three Minute Thesis Competition in July, and the Postgraduate Symposium for third- and fourth-year students in November, all aim to create a nurturing, stimulating and fun environment for students.

In 2012, MIMR had 79 PhD students. There were nine new PhD students enrolled in 2012. This year, 11 students were awarded their PhDs and a further six students submitted their PhD theses.

For the second consecutive year, the Mollie Holman Medal for the best PhD thesis in the Faculty of Medicine, Nursing and Health Sciences, was awarded to an MIMR student. For 2012, the winner was Dr Georg Schmoelzer, a student of Professor Stuart Hooper in The Ritchie Centre.

Dr Schmoelzer's thesis "Monitoring respiratory function during neonatal resuscitation" focused on the fact that around 10 per cent of preterm babies struggle to breathe on their own immediately after birth. His research has rekindled commercial interest in developing and updating a new respiratory function monitor for the delivery room.

He has also been awarded a Banting Fellowship, the highest Postdoctoral Fellowship in Canada. Dr Schmoelzer is now a Research Neonatologist with the University of Alberta and the Royal Alexandra Hospital in Edmonton, Canada, where he is continuing his research into helping babies to breathe.

Our postgraduate students were very successful in obtaining postdoctoral fellowship positions, both internationally and nationally, funded by a number of organisations.

Dr Ryan Hodges was awarded a National Health and Medical Research Council of Australia Hamilton Fairly Early Career Fellowship. He has since taken up a position in the Department of Obstetrics and Gynaecology at the University of Leven, Belgium.

COMMUNITY EDUCATION AND EDUCATION EVENTS

Mr Matthew King, Year 10, Camberwell Grammar School and Ms Elizabeth Azidas-Yates, Year 10, Melbourne Girls' College.

Student Symposium award winners (from left): Life Technologies' Ms Diane Arbabi and Dr Lucy D'Agostino with Student Symposium award winners Rob Galinsky, Lauren Nisbet and Sam Forster.

The Institute is committed to ensuring that our scientists can effectively communicate their science and the rationale for their research project to the wider community.

This essential skill is not only necessary for taxpayers who fund much of our research, but also to ensure that the wider community knows what we are doing and the translational clinical, social and ethical implications.

ABC RADIO NATIONALS' SCIENCE SHOW WITH ROBYN WILLIAMS

The research projects of four MIMR PhD students featured on The Science Show, presented by Dr Robyn Williams on ABC Radio National.

The following broadcasts were made:

Mr James Aridas
(The Ritchie Centre)
"Melatonin: a possible treatment for asphyxia" (18 August, 2012)

Ms Lauren Nisbet
(The Ritchie Centre)
"Studying young children who snore" (22 September, 2012)

Mr Samuel Forster
(Centre for Innate Immunity and Infectious Diseases)
"Combining genetics and computers to develop new-era medicines" (6 October, 2012)

Ms Agnieszka Pindel
(Centre for Cancer Research)
"The proteins which regulate obesity" (1 December, 2012)

These presentations can be viewed online at **www.monashinstitute.org** and each has a full recorded podcast. Further broadcasts are planned for 2013.

WORK EXPERIENCE

To nurture the scientists of tomorrow, the Postgraduate Committee coordinates a work experience program for school students in years 10 and 11.

In 2012, nine students spent time in each of the Institute's main research centres and technical facilities, and gained valuable insights into the world of the medical researcher.

STUDENT OPEN DAY 2012

The annual Student Open Day provides undergraduate students with the opportunity to see first hand the diverse range of research projects on offer at MIMR. Sixty-three students attended the 2012 Open Day, which was held jointly with Prince Henry's Institute and the Southern Clinical School.

Evaluation surveys handed out at the conclusion of the Open Day showed that the postgraduate student-led tours were popular, and the researchers were rated as very informative and approachable.

When asked what attracted them to studying at MIMR, students listed cutting-edge technology, good working environment, laboratory facilities and the research undertaken as their main areas of interest.

COMMUNITY EDUCATION AND EDUCATION EVENTS (CONTINUED)

THREE MINUTE THESIS COMPETITION

On 13 July, MIMR held its Three Minute Thesis Competition (3MT), attracting 25 of our talented PhD students. The 3MT is a transnational competition for PhD students from Australian and New Zealand Universities.

With the aim of developing researchers' communication skills, the competition challenged PhD students to translate their research into an engaging three minute oral presentation for a non-scientific audience.

Presentations were of an exceptionally high standard, covering a range of research areas.

Topics included finding new therapeutic targets for cancer, how to optimise the care of pregnant women and preterm babies, and how a systems biology genomics approach will help us to better understand innate immunity.

The winners were:

First Prize:

Ms Lauren Nisbet
(The Ritchie Centre)

Second Prize:

Ms Seshini Gurusinghe
(The Ritchie Centre)

Third Prize:

Ms Lisa McKenzie
(Centre for Cancer Research)

POSTGRADUATE STUDENT SYMPOSIUM

The MIMR annual Postgraduate Student Symposium in which third and fourth year PhD students presented their research projects was held on 13 November.

The Institute appreciates the funding support from Life Technologies and the Monash Postgraduate Association.

Designed to improve scientific presentation skills, including the writing of scientific abstracts, and to share the research achievements of our PhD students with the whole MIMR community, the Symposium showcases the critical role of student research to the Institute's success and international reputation.

The event is attended by all MIMR staff and students, who provide the student presenters with an opportunity to respond to robust questions.

Senior staff and postdoctoral fellows evaluated the presentations and provided the presenters with constructive feedback.

The Symposium prizes were generously sponsored by Life Technologies, who has continued to sponsor this program for many years.

Life Technologies' representative, Dr Lucy D'Agostino, presented certificates to the winners.

The winners were:

First Equal Prizes:

Mr Samuel Forster
(Centre for Innate Immunity and Infectious Diseases)

Mr Robert Galinsky
(The Ritchie Centre)

Ms Lauren Nisbet
(The Ritchie Centre)

Runner-Up Prize:

Dr Monika Skubisz
(The Ritchie Centre)

Team Player Award:

Dr Daniela Ulrich
(The Ritchie Centre)

ANDROLOGY AUSTRALIA

Andrology Australia (the Australian Centre of Excellence in Male Health) is administered by MIMR and funded by the Australian Government Department of Health and Ageing.

As it has done for the past 12 years, Andrology Australia continues to increase the awareness of men's health in Australian governments, health organisations, health professionals, men and their families, and the wider community, using a range of innovative and evidence-based health promotion and education resources.

The first six months of 2012 concentrated on finalising several major initiatives, including practice nurse education and education of GPs working with Culturally and Linguistically Diverse (CALD) communities. With the success of both initiatives clear from separate evaluations, it is hoped that these programs can continue through future workforce funding schemes.

Andrology Australia received funding for another three years from the Australian Government Department of Health and Ageing under the Health System Capacity Development Fund. Planning commenced immediately to develop new program strategies across Andrology Australia's continuing themes of health professional and community education, and research for 2013 and beyond.

A priority area for Andrology Australia is education and training to improve the health of Aboriginal and Torres Strait Islander males. Guided by the Andrology Australia Aboriginal and Torres Strait Islander Male Health Reference Group, the development of a Male Health Education Module for Aboriginal Health Workers was recently completed.

A DVD resource was also developed to complement the module and provides health professionals working with Aboriginal and Torres Strait Islander males knowledge and practice strategies to initiate dialogue and engage with Aboriginal and Torres Strait Islander males about the associations between chronic disease and erectile dysfunction. The DVD resource will be available early in 2013.

Andrology Australia undertakes a range of health promotion activities to encourage men to seek help from their local health service, including providing quality and evidence-based resources to about 1000 organisations running men's health events in their local communities each year.

Men's health clinical and patient resources are also increasingly popular, with more than 13,000 individuals and organisations across Australia registering for the Andrology Australia newsletter, The Healthy Male, and more than 250,000 consumer guides distributed to date. Ongoing evaluation ensures that education and health promotion resources address identified gaps and areas of education need, particularly for more disadvantaged groups of males.

For more information about Andrology Australia, please visit **www.andrologyaustralia.org**

2012 GRADUATES

PHD

Sanja Coso
Centre for Cancer Research

Molecular mechanisms regulating lymphangiogenesis

Renaud Pierre Quantin
Centre for Cancer Research

Pax6 involvement in bladder cancer metastasis

Anton Kolosov
Centre for Cancer Research

Preclinical investigation of analgesic drug candidates in combination

Durda Pavasovic
Centre for Innate Immunity and Infectious Diseases

Factors involved in bone metabolism and osteoclast function

Yuet Mei (Hazel) Tye
Centre for Innate Immunity and Infectious Diseases

Characterization of gastric disease in gp130 mutant mice

Alexandra Grubman
Centre for Innate Immunity and Infectious Diseases

The role of strain heterogeneity in helicobacter pylori colonisation, virulence and host adaptation

Melanie Hutton
Centre for Innate Immunity and Infectious Diseases

The role of cholesterol in H. pylori interactions with host cells

Lulu Fu
The Ritchie Centre

Molecular and cellular studies on eutopic and ectopic endometrium

Ana Baburamani
The Ritchie Centre

An investigation into the effect of in utero hypoxia on cerebral blood vessels and brain activity in late gestation fetal sheep

Annie McDougall
The Ritchie Centre

The role of Trop2 in fetal lung development

Patricia Vosdoganes
The Ritchie Centre

Human amniotic epithelial cells in the treatment of preterm lung disease

Ryan Hodges
The Ritchie Centre

Human amnion epithelial cells as a therapy for preterm lung disease

Hong Nguyen
The Ritchie Centre / Centre for Cancer Research

Candidate markers of epithelial stem/progenitor cells in human endometrium and endometrial cancer

Suzanita Utama
Centre for Reproduction and Development

Monitoring and assessment of nuclear transfer pregnancies using maternal pregnancy recognition proteins

Madleen Busse
Monash University Science Faculty

Design and development of novel bismuth compounds as potential contrast agents for diagnostic imaging and antibiotics against Helicobacter pylori

BACHELOR OF BIOMEDICAL SCIENCE (HONS)

Hendrika Duivenvoorden
Centre for Innate Immunity and Infectious Diseases

The role of IRF7 in mammary gland development and tumorigenesis

BACHELOR OF BIOTECHNOLOGY (HONS)

Kimberley D'Costa
Centre for Innate Immunity and Infectious Diseases

Helicobacter pylori interactions with macrophages and the inflammasome

2012 GRADUATES (CONTINUED)

BACHELOR OF MEDICAL SCIENCE (HONS)

Nicole Mennie
Centre for Cancer Research

Are post-operative antibiotics indicated in simple appendicitis. A prospective randomised control trial

Thomas Darling
Centre for Cancer Research

Nucleotide polymorphisms within the TAp63 promoter region of individuals with bladder exstrophy-epispadias complex

Alison Browning
Centre for Innate Immunity and Infectious Diseases

STAT3 and the AIM2 inflammasome in gastric cancer

Tricia Chung
Centre for Innate Immunity and Infectious Diseases

Characterising the role of a novel interferon in female reproductive tract pathology and infection

Carla Gunawan
Centre for Reproduction and Development

The regulation of mitochondrial DNA copy number during gametogenesis and embryogenesis

Alexandra Clarke
The Ritchie Centre

Optimising oxygen delivery to preterm infants: the effects of operator response time and clinical algorithms

Christine Fenton
The Ritchie Centre

Inhibition of Activin A as a possible therapeutic for pre-eclampsia

Fadila Asmaniar
The Ritchie Centre

Potential roles for Wnt signaling in endometrial epithelial progenitor cells

Maria Nguyen
The Ritchie Centre

Effect of intrauterine inflammation on the development of atherosclerosis

Nadia Tita Indriasti
The Ritchie Centre

Use of activated protein C to reduce brain injury from birth asphyxia

Helen McNamara
The Ritchie Centre

The effects of prophylactic in utero progesterone, given in twin pregnancy for the prevention of preterm birth, on child health and development at three to six years of age

Madeleine Finney-Brown
The Ritchie Centre

Reproductive and sexual health attitudes, behaviours and service utilisation of young women in Australia's Northern Territory

James Aridas
The Ritchie Centre

Protecting the newborn brain following asphyxia at birth

Karinna Fyfe
The Ritchie Centre

Effects of sleep position, sleep state and postnatal age on cerebral oxygenation in preterm infants

Eugenia Koulaeva
The Ritchie Centre

Follistatin in the treatment of bronchopulmonary dysplasia

Tracey Ong
The Ritchie Centre

The effects of an initial sustained inflation on asphyxiated near-term lambs

BACHELOR OF SCIENCE (HONS)

Sarah Holt
The Ritchie Centre

Establishing an in vitro model of over-distension injury to investigate the role of early response genes in mediating the effects of lung injury at birth

SUPPORTING OUR RESEARCH

Monash Health Translation Precinct Core Facilities
Chief Operating Officer Report
Human Resources
Staff Support
Philanthropy, Fundraising and Community Engagement
Grant Funding Awarded and Received
Supporters

MONASH HEALTH TRANSLATION PRECINCT CORE FACILITIES

CORE FACILITIES MANAGER: Dale Cary

The Monash Health Translation Precinct (MHTP) is a partnership between MIMR, Prince Henry's Institute, Monash University and Monash Health (Monash Medical Centre).

This collaboration between researchers and clinicians increases the impact of research through the translation of laboratory findings into improved clinical treatments.

Researchers and clinicians within the MHTP are fortunate to have a broad range of high quality laboratory core facilities that support the Precinct's scientific and clinical work.

The Precinct's core facilities services comprise:

- A dedicated satellite Monash Microimaging Facility
- Flow Cytometry Facility
- Histology Facility
- The Monash Medical Centre Animal Facilities
- A dark room and developer
- An odyssey infra red scanner
- An xCELLigence instrument

MHTP MEDICAL GENOMICS FACILITY

MANAGER: Vivien Vasic

MHTP Medical Genomics Facility, comprising the following:

- ACRF Centre for Cancer Genomic Medicine
- The Gandel Charitable Trust Sequencing Centre
- MHTP High Content Screening Centre
- MHTP Microarray Centre

The highlight of 2012 was the official launch of the **Australian Cancer Research Foundation (ACRF) Centre for Cancer Genomic Medicine** on 15 October by the Federal Member for Hotham, the Hon Simon Crean MP.

Established in 2011 from a $1.6 million ACRF grant, together with $169,000 funding from the NHMRC, the Centre hosts the latest next generation sequencing technologies.

This equipment is essential for the rapid sequencing of entire genomes, providing researchers with greater insight into the nature of genes involved in cancer and other diseases. These insights are critical for the development of therapies targeting specific cancers.

MONASH HEALTH TRANSLATION PRECINCT CORE FACILITIES (CONTINUED)

Sequencing of the first human genome took more than 10 years to accomplish, but now with this new technology, the same amount of information can be generated in a couple of days.

The Gandel Charitable Trust Sequencing Centre has a long tradition of providing access to quality DNA sequencing services. The Centre was named in recognition of the Gandel family's support. Since 1999, it has provided services to 500 medical researchers and clinicians based at the MHTP, as well as nationally.

The Centre has continually expanded, and has developed and introduced new genomic services to support the world-class research undertaken within the Precinct.

In 2012, the Centre introduced a Cell Line Identification service through DNA analysis, allowing the authentication of cell lines used for medical research. This is a critical quality control measure to ensure data accuracy and research quality.

The **MHTP High Content Screening Centre** enables researchers to perform cell biology experiments where cellular processes are detected and quantitated using automated analysis. In 2012, researchers used fluorescent dyes and proteins to measure processes such as mechanisms of cell death, cell growth and/or activation of specific intracellular pathways.

These assays are used in combination with drug treatment or inhibition ('knockdown') of individual genes to determine their effect on cellular functions. Such approaches have identified novel genes that contribute to these mechanisms.

The **MHTP Microarray Centre** provides the technology to compare gene expression levels in thousands of genes simultaneously or, simply put, identify which genes are turned on and off during disease.

This technology is used for both diagnostic applications and medical research. It provides clinicians with a powerful tool for molecular karyotyping – investigating individuals with developmental disabilities or congenital conditions. At MIMR, researchers investigating the effects of influenza viral infections on lung activity used microarray technologies to determine the gene activity during different treatments.

MHTP Medical Genomics Facility research highlights

MIMR researchers from the Centre for Cancer Research discovered a critical role for the microRNA-19 molecule in the positive control of inflammation (Gantier et al, *Nucleic Acids Research*, 2012). DNA present in membrane blebs released by bacteria has been sequenced in the Facility.

The aim of the work was to determine whether such DNA is of chromosomal and/or plasmid origin, and whether this material represents random fragments or if specific sequences are present. This is a great technical advance.

MIMR researchers from the Biomedical Genomics Laboratory in the Centre for Reproduction and Development have used the Facility to identify a new gene associated with the development of testicular cancer. Different epigenetic patterns in subtypes of testicular cancer were also identified. These findings may lead to the development of improved diagnostic and treatment protocols.

HISTOLOGY FACILITY

MANAGER: Lesley Wiadrowski

The Histology Facility supports staff and students within the MHTP and broader research community, through the provision of high quality histological services. In 2012 we saw an expansion of the services available at MIMR.

Several key pieces of equipment were upgraded, leading to greater efficiencies and a reduction in turnaround times by as much as 50 per cent.

These changes also allowed us to avoid price increases for the third year running, in spite of increased costs from our suppliers. We have also increased the number of special stains on offer in response to our users' needs.

The additional services available have led to an even greater demand and the Facility is often operating at full capacity. We hope to continue with planned equipment updates into 2013 and will begin the search for a larger laboratory area to accommodate future expansion.

MONASH MEDICAL CENTRE ANIMAL FACILITIES

MANAGER: Monika Generowicz

Work in the Monash Medical Centre Animal Facilities (MMCAF) in 2012 was busy, but always interesting.

Sharleen Munro and Carlie Tobias did an excellent job in dealing with incoming animals each week, whilst moving current animals to other areas within B block, dependent on researchers' requirements.

MONASH HEALTH TRANSLATION PRECINCT CORE FACILITIES (CONTINUED)

Conventional mouse use has decreased significantly, as researchers are encouraged to move their mouse work to the cleaner specific pathogen free (SPF) areas. We are hoping to be able to officially close down all the conventional mouse rooms in B block during 2013.

As always, the SPF areas were under constant use and vacant spaces were filled by either new mouse colonies being introduced into MMCAF or by the animals of new researchers joining the Precinct.

There were a number of staffing changes in 2012, as Jo Howden left us temporarily early in the year to have her second baby, while Emily Humphris and Jess Thomas moved on to other areas within the Monash Animal Research Platform. In addition, we said farewell to Carlie Tobias and Michelle McMurtrie during 2012.

We welcomed Dalibor Stanojkovic to our conventional staff team, as well as Sue Chapman who will be assisting in the overall management of the facilities. While it was a challenging year for some of our staff, I am, as always, grateful for the excellent team that we have here at MMCAF.

Plans for another redevelopment of the current B and E block areas are on the drawing board, so 2013 promises to be an interesting year.

CHIEF OPERATING OFFICER REPORT

The role of the Chief Operating Officer at MIMR is to oversee the finance, purchasing and logistics, human resources, occupational health and safety, and general administration roles within the Institute.

Following the Federal Government's announcement of the Monash Health Translation Precinct (MHTP) Translational Research Facility, we have spent a significant amount of time in planning the development of this building and the Precinct as a whole.

Working with our Precinct partners, we have successfully selected our project consulting teams. The building development has progressed through to schematic design and we are now almost at design development phase.

Financially, it was another successful year for the Institute. We increased our net revenue (especially research grant revenue) and reduced our non-salary spend, allowing us to have a small operating surplus in 2012. The increase in capital expenditure was due to the purchase of next generation sequencing equipment, funded by the Australian Cancer Research Foundation.

MIMR continues to build on its core capabilities and develop more effective and efficient operating systems and protocols. Whilst a great deal of investment has been made in improving the physical and system-based support infrastructure, it is the dedicated, talented, hardworking administration support teams that provide the vital back up for our researchers.

I would like to thank all administrative staff for their hard work throughout the year. I would also like to thank our Director Professor Bryan Williams and the Centre Directors for their ongoing support.

ROD WEALANDS
CHIEF OPERATING OFFICER

> "MIMR continues to build on its core capabilities and develop more effective and efficient operating systems and protocols."

HUMAN RESOURCES

HR MANAGER: Tegan McPherson

In 2012, we continued to streamline and improve our HR systems and processes, with the aim of easing the researchers' administrative workload and simplifying and shortening processes.

The HR team implemented new processes and systems to assist with the reappointment of our fixed-term, casual and adjunct staff members, classification of appointments and confirmation of probation periods for research staff. The new contract expiry management system was launched towards the end of the year, in preparation for the high workload associated with contract renewals.

This system allowed contracts to be approved and distributed for acceptance electronically and then fed through to the payroll system for processing. This has been a significant improvement to the process and was well received.

Throughout the year, a strong demand for recruitment continued, including the reappointment of many existing staff. We also welcomed a new Laboratory Group Head for the Centre for Cancer Research.

In addition, MIMR's Research Centres continued to attract an increased number of international visitors, adjuncts and affiliations, which resulted in the Institute experiencing a peak in the number of international visitors.

Following feedback from the MIMR Scientific Review, we focused on the development of our research staff at all levels. As a result, towards the end of the year we were able to introduce a new program called the Strategic Researcher Workshop, which received overwhelmingly positive feedback and will therefore continue to be offered in future years.

In August, we farewelled Melanie Varcoe and welcomed Amy Salisbury to the HR team, to help support the continued growth of the Institute.

A focus for 2013 will be to improve the induction process, to ensure that new research groups and research staff are welcomed into the Institute with greater ease and minimal disruption to research activities.

In addition, we will be continuing to improve the management of our casual workforce to make this a more efficient process.

STAFF SUPPORT

OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT

MANAGER: Ganeema Tokhi

MIMR is committed to improving workplace safety and recognises that quality Occupational Health, Safety and Environment (OHSE) procedures contribute to its research success. Therefore OHSE is an integral part of the Institute's research and management activities.

The Institute provides the highest standards of compliance with all relevant OHSE legislations, as well as Monash University's OHSE policies, and Management System. This provides staff, students, visitors and contractors with the highest level of protection in the workplace. The Management System at MIMR fosters a cooperative and consultative process on workplace health and safety.

Measures taken during the year to ensure the health and safety of employees include:

- **OHSE induction and training.** The Institute has achieved full compliance in safety induction programs for new staff and students. OHSE induction programs are conducted monthly to capture all new employees. Other specialised training is provided to all relevant employees on the outcome of risk assessments for procedures, activities and equipment usage.
- **Internal and external auditing and bi-annual workplace inspections.** These are an integral part of the OHSE Management System. The primary objective of these audits is the continual improvement of the OHSE systems.
- **Hazard and incident reporting and investigation.** The number of reported incidents and hazards continued to fall in 2012. This is attributed to the proactive and prompt identification of potential hazards before an incident occurs.

In addition, the Monash Bike Share Scheme has been implemented at the Institute. Four green prototype bikes and helmets have been provided for staff to travel between campuses.

PURCHASING AND FINANCE

MANAGER: Rod Gillett

The Purchase to Payment (P2P) team (formerly known as logistics) supports the needs of researchers, staff and students.

Tasks undertaken include asset management, laboratory moves, incoming and outgoing goods, contracts, purchasing and mail.

The team comprises six staff who have been extremely busy in 2012, placing more than 5500 orders and receiving 7200 deliveries in the main store.

While 2012 was a very busy year, we also had a lot of success and morale was high.

eSOLUTIONS - SERVICE CENTRE MMC

TEAM LEADER: Kristian Goree

Service Centre MMC supports staff at MIMR, Prince Henry's Institute and Southern Clinical School of Monash University Faculty of Medicine, Nursing and Health Sciences.

A major eSolutions project for 2012 was the deployment of wireless internet to Monash staff within all Monash Health locations (Clayton, Kingston, Dandenong, Moorabbin and Casey). This provided staff and students with network access for mobile devices, similar to the Monash main campus.

Deployment of a University-wide standard operating environment began in 2012, with new machines providing a higher level of data security, mobility and support for all staff.

PHILANTHROPY, FUNDRAISING AND COMMUNITY ENGAGEMENT

Our supporters provide valuable funding that enables MIMR to stay at the cutting edge of research. Every year we receive donations from generous individuals – some of whom make a donation in memory of a loved one and others who make an impact through a legacy gift or bequest.

Likewise, we are grateful for the support of many trusts, foundations and companies who help to fund our pioneering research projects, equipment, platform technologies, staff and students. We would like to sincerely thank all our supporters for their generosity in 2012.

STAFF PHILANTHROPY

Once again MIMR initiated a staff philanthropy campaign to raise funds for the MIMR Training and Education Fund. The fund was established to provide support for staff, students and researchers within the Institute to develop their careers.

Funds raised this year will enable us to provide a number of people with training and education grants, which will allow them to attend conferences or travel overseas during 2013. We are very pleased that many of our staff members have supported this important initiative.

PATRONS CLUB

The Patrons Club recognises individuals who donate an annual gift of $1,000 or more to MIMR. This group of donors provides valuable support to the Institute's research programs and also provides our researchers with the opportunity to engage with the community through our Patrons Club events.

Our thanks go to Mr Robert Smorgon AM, for his continued role as Chair of the Patrons Club.

2012 RON EVANS GOLF DAY

The annual Ron Evans Golf Day honours businessman, sportsman and philanthropist Ron Evans AM, and raises money for the bowel cancer research program at MIMR.

The sixth Ron Evans Golf Day took place in 2012 and was a great success once again, with over 100 players competing on the prestigious Royal Melbourne Golf Course. After a day on the course, players enjoyed dinner followed by a live and silent auction, which raised further funds for our research.

The 2012 Ron Evans Golf Day raised close to $200,000, which will support two Ron Evans Cancer Research Fellowships in 2013. Once again the success of this event would not have been possible without the leadership and support of the Evans family and we sincerely thank them for their continued commitment to MIMR.

PHILANTHROPY, FUNDRAISING AND COMMUNITY ENGAGEMENT (CONTINUED)

COMMUNITY ENGAGEMENT

MIMR understands the importance of community engagement and the need for general community awareness about the research being conducted at the Institute.

The Institute's Discovery Tours Program is a key way of providing the wider community with an opportunity to meet MIMR's researchers and learn first-hand about our latest research developments.

In 2012, MIMR conducted several Community Organisation presentations where guests from various Rotary Clubs and Inner Wheel, and school students learnt about stem cells, women's health, cancer and inflammation, as well as genomics.

The Institute is proud of its researchers who spend time speaking about their research to community groups and schools. Each year a number of our staff spend valuable time promoting science education to the community, either taking part in organised programs such as CSIRO's Scientists in Schools program, or speaking to individual school and community groups at their request.

The Ritchie Centre hosted two annual public events in 2012. The Kaarene Fitzgerald Community Lecture, which focuses on Sudden Infant Death Syndrome research, held at Monash Health, and its second public health discussion, which this year focused on Childbirth and the Pelvic Floor, held at RMIT's Storey Hall in Melbourne's CBD. Both of these events were well attended by health professionals and the public, and will continue to grow in the coming years.

The Institute also values the importance of the role the media plays in raising awareness of the research being conducted by our scientists.

During 2012 the Institute received national and international media attention, in particular for its research findings on potential blocking agents for breast and stomach cancer, and the use of melatonin to protect the brains of prenatal babies. The controversial issue of three-parent IVF to reduce mitochondrial disease also received strong coverage.

The Institute encourages its PhD students to consider communicating their work with the wider public, by working with ABC Radio National's Science Show, hosted by Robyn Williams. In our first year of involvement with this program, we saw four of our students' recordings go to air nationally.

GRANT FUNDING AWARDED AND RECEIVED

MIMR would like to acknowledge the significant support it receives from the Federal and State Governments, philanthropic trusts and foundations and organisations in Australia and overseas.

We would like to particularly thank the Victorian State Government for its funding of the Institute through the Operational Infrastructure Support Program.

NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL (NHMRC)

NHMRC PROJECT GRANTS

D de Kretser, K Dwyer, T Kotsimbos, G Snell, M Hedger

Activin A and follistatin are potential key regulators of organ transport dysfunction and graft survival

2013-15

$517,097

H Dickinson, D Walker, R Snow, F Wong

Creatine, a multi-organ protectant against hypoxic injury in the neonate

2013-15

$506,031

P Hertzog

Characterising the novel signalling mechanism for a new interferon

2013-15

$507,347

J Hirst, D Walker, M Tolcos

Disrupted neurosteroid synthesis mediates the adverse effects of prenatal stress

2013-16

$671,953

D Jans, R Ghildyal, R Tripp, P Bardin

Respiratory syncytial virus matrix protein-host protein interactions as targets for therapeutics

2013-15

$663,680

B Jenkins, R Ferrero, E Latz

Novel regulation of inflammasomes by cytokine signalling pathways in gastric disease

2013-15

$650,643

S Mahalingam, P Bardin, M Rolph, R Tripp

Inhibition of IFN-α/β by Human Metapneumovirus and the Induction of Inflammation

2013-16

$584,362

S Miller, E Wallace, G Jenkin, M Fahey, M Ditchfield, R Hunt

Enhancing the neuroprotective benefit of hypothermia with melatonin in the asphyxiated neonate

2013-15

$758,227

M Nold, C Nold, C Rosado

Taking the first steps from promise to product: exploration of the newly discovered interleukin 37 receptor complex and its signaling pathways

2013-15

$670,143

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

M O'Bryan, R McLachlan, D de Kretser

Leucine-rich guanylate kinase is a regulator of sperm tail development and motile cilia function

2013-15

$521,972

B Parker, P Hertzog

Tumour induced innate immune responses that control breast cancer metastases

2013-15

$531,722

A Sadler, B R Williams

Gelsolin as a novel antiviral target

2013-15

$440,047

J St John, I Trounce

Understanding mitochondrial DNA segregation and transmission

2013-15

$492,863

D Walker, R Snow, R deMatteo, F Wong, H Dickinson, G Polglase

Creatine supplementation during pregnancy as a means of improving outcomes from preterm birth

2013-15

$463,479

E Wallace, R Lim, C Bernard, G Jenkin

Immunoregulatory properties of amnion: from pregnancy to regenerative medicine

2013-15

$430,943

M Wallace, M Nold, C Nold

Mediators of abnormal lung development

2013-15

$678,908

N Watkins, C Peacock, V Ganju

Mechanisms of Hedgehog signalling in small cell lung cancer

2013-15

$424,139

P Western

Epigenetic regulation of male fetal germ cell development

2013-15

$542,679

P Western

Determining the impact of inherited epigenetic information on development and disease

2013-15

$493,936

S Yiallourou, E Wallace, R Horne, S Hope

Being born small is not good for the heart: novel assessments for early detection of cardiovascular risk

2013-15

$469,024

NHMRC DEVELOPMENT GRANTS

A Fouras, K Siu, S Hooper, D Watkins, D Parsons, G Zosky, B Jenkins, D Spanswick

From the synchrotron to the clinic: a novel functional lung imaging technology

2013-15

$859,797

S Ricardo, G Jenkin, E Wallace

Novel therapy for enhancing organ maturation in pre-term babies

2013-15

$670,359

NHMRC EQUIPMENT GRANTS

M O'Bryan, L Furic, G Risbridger, J Bertram, G Lieschke, I Smyth, D Watkins, T Cole, P McMenamin, H Abud, K Loveland

Aperio ScanScope AT (Digital slide scanner) with operating software and web-based Spectrum™ server license for an unlimited number of digital images

2012

$180,000

M Watt, C Mitchell, T Tiganis, P Currie, Z Andrews, I Clarke, M O'Bryan, M Cowley, M Sleeman, D Dowling, K Gabriel, G Risbridger, C Bruce, K Brown, T Johns, C Sobey, B Henry

Seahorse XF24 Extracellular Flux Analyser

2012

$135,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

NHMRC FELLOWSHIPS

S Biggs

NHMRC Peter Doherty Biomedical Fellowship (Australia) - Early Career Fellowship

Novel mechanism underlying the behavioural and neurocognitive deficits in children with sleep disorders

2013-16

$299,564

C Gargett

NHMRC Research Fellowship SRF B

The role of endometrial stem cells in women's reproductive health and disease and their use in cell based therapies

2013-17

$727,765

T Moss

NHMRC Research Fellowship SRF A

Understanding and treating infection or inflammation in newborns

2013-17

$590,785

H Yim

NHMRC Australia-China Exchange Fellowship (overseas) - Early Career Fellowship

A role for double-stranded RNA-dependent protein kinase in regulating Nod-like receptor signaling for modulating colitis and colitis-associated cancer

2013-14

$224,542

NHMRC MEDICAL / DENTAL POSTGRADUATE RESEARCH SCHOLARSHIPS

S Joosten

Phenotypes of obstructive sleep apnoea

2012-14

$113,237

T Leong

Royal Australasian College of Physicians Arnott Research Entry Scholarship in Cancer Research

2013-15

$88,151

AUSTRALIAN RESEARCH COUNCIL (ARC)

FUTURE FELLOWSHIP

M McKenzie

New models of mitochondrial fatty acid oxidation disorders

2012-2016

$713,848

ARC LINKAGE GRANTS

T Moss, G Polglase, S Hooper, M Kitchen, A Fouras, A Tatham

Optimising bubble continuous positive airway pressure (CPAP) for preterm infants

2012-14

$192,676

AUSTRALIAN SYNCHROTRON COMPANY LTD

C Sprung

DNA damage kinetics in response to intra-cellular irradiation

2012

$9,800

VICTORIAN CANCER AGENCY (VCA)

PLATFORM TECHNOLOGY CAPACITY BUILDING GRANT

V Ganju

Sequential evaluation of tumours undergoing pre-operative therapy (SETUP) trial study

2012

$50,000

ADVANCED MANUFACTURING CRC

CYTOMATRIX

G Jenkin

Development of an in vitro cell culture device

2012-15

$287,700

ANZ TRUSTEES

MEDICAL RESEARCH & TECHNOLOGY IN VICTORIA GRANTS

M McKenzie

Generating new induced pluripotent stem (iPS) cell models of human metabolic disease

2013

$30,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

C Nold

L-37: a new potential anti-inflammatory therapy for infants with necrotising enterocolitis

2013

$25,000

F Wong, A Edwards, S Menahem, A Veldman, D Schranz

Fetal cardiac intervention of congenital heart disease

2013

$30,000

AUSTRALASIAN SLEEP ASSOCIATION

ROB PIERCE GRANT IN AID

S Biggs

Slow wave activity in children with excessive daytime sleepiness: a role in identification of narcolepsy?

2012

$10,000

AUSTRALIAN LUNG FOUNDATION

LUNG CANCER PROGRAM POSTGRADUATE GRANT-IN-AID FOR LUNG CANCER RESEARCH

T Leong

Development of primary xenografts as a platform for personalised medicine in non-small cell lung cancer

2012-13

$5,000

CEREBRAL PALSY ALLIANCE

PROJECT GRANTS

H Dickinson, D Walker, R Snow

Creatine, a multi-organ protectant against hypoxic injury in the neonate

2012-13

$100,000

M Tolcos

Identifying regulatory and therapeutic target in perinatal white matter injury following intrauterine growth restriction

2013

$80,968

CLIVE & VERA RAMACIOTTI FOUNDATION

ESTABLISHMENT GRANT

F Wong, R Horne, N Brew, S Yiallourou

Is sleeping preterm babies in prone position in the NICU beneficial for their brain development

2013

$74,674

COLLIER CHARITABLE FUND

EQUIPMENT GRANT

R Lim, E Wallace

Zeiss Stemi 2000-C Trinocular microscope with mounted T3i DSLR camera (MDSLR-Zs adapter)

2013

$2,699

CURE FOR LIFE FOUNDATION

T Johns

2013-15

$900,000

TONY LUCAS INNOVATIVE PROJECT GRANT

T Johns, K McDonald

Targeting the platelet-derived growth factor receptor-α in brain cancer

2013

$45,000

FINANCIAL MARKETS FOUNDATION FOR CHILDREN

PROJECT GRANTS

G Polglase, M Tolcos, K Crossley

Understanding the effect of preterm birth on brain blood flow and subsequent brain injury

2012-14

$154,592

M Tolcos, E Wallace, D Walker

Regulation of myelination in intrauterine growth restriction: identification of potential therapeutic targets

2012-13

$142,578

HAROLD MITCHELL FOUNDATION

2012 POST-DOCTORAL TRAVEL FELLOWSHIP

M Gantier

2012

$5,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

2012 PHD STUDENT TRAVEL FELLOWSHIP

A Sutherland
2012
$5,000

HEARTKIDS AUSTRALIA

GRANT-IN-AID

F Wong, A Edwards, S Menahem, A Veldman, D Schranz
Understanding the fetal circulation and physiology in congenital heart disease
2013
$20,000

IAN POTTER FOUNDATION

TRAVEL GRANT

R Lim
2012
$1,134

IKARIA AUSTRALIA

EQUIPMENT GRANT

G Polglase, S Hooper, A Gill, M Kluckow, T Moss, M Wallace, K Crossley, M Siew, M Tolcos
2012
$20,000

INNER WHEEL AUSTRALIA INC

PROJECT GRANT

G Jenkin, S Miller, M Fahey, E Wallace
Cord blood stem cells to reduce brain injury in newborn
2012-13
$130,000

JACK BROCKHOFF FOUNDATION

MEDICAL RESEARCH GRANT

K Tan
Computerised controller for oxygen delivery in a lamb model of periodic breathing
2012
$25,939

LYNNE QUAYLE CHARITABLE TRUST

PROJECT GRANT

S Miller
Decreasing cerebral palsy - a stem cell study
2013
$19,900

MARIAN & EH FLACK TRUST

PROJECT GRANT

C Nold, M Nold
Interleukin 37 for necrotizing enterocolitis (NEC)
2012
$28,035

MONASH INSTITUTE OF MEDICAL RESEARCH

MIMR EDUCATION & TRAINING GRANTS

K Fung
2012
$1,500

R Kelly
2012
$1,500

N Brew
2012
$1,500

R Lim
2012
$1,500

MONASH IVF RESEARCH & EDUCATION FOUNDATION

PROJECT GRANTS

E Dimitriadis, T Osianlis, S White, L Rombauts
Endometrial-embryo interactions critical for IVF success
2012-13
$115,164

S White, L Rombauts, E Wallace
Defining the impact of different assisted reproduction technology (ART) protocols on the placental epigenome
2012-13
$50,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

NATIONAL HEART FOUNDATION OF AUSTRALIA

GRANT-IN-AID

R Horne, G Nixon, M Davey, L Walter

Understanding the relationship between childhood obesity and obstructive sleep apnoea

2013-2014

$129,110

PARANTA BIOSCIENCES

PROJECT GRANT

M Hedger

Exogenous follistatin bioactivity study

2012

$6,000

PERINATAL SOCIETY OF ANZ

DAVID HENDERSON SMART SCHOLARSHIP

N Brew

Demonstrate that 5A-APC will limit extent of brain injury

2013-14

$9,984

PETER MACCALLUM CANCER CENTRE

AUSTRALASIAN SARCOMA STUDY GROUP, URSINI RESEARCH GRANT

J Cain, N Watkins

Investigating the therapeutic potential of pharmacological modifiers of epigenetic gene silencing in pre-clinical models of osteosarcoma

2012

$50,000

RANZCOG RESEARCH FOUNDATION

GLYN WHITE RESEARCH FELLOWSHIP

M Tolcos

Using diazoxide to promote oligodendrocyte differentiation and myelination in the IUGR brain

2013-14

$60,000

ELLA MACKNIGHT MEMORIAL SCHOLARSHIP

K Schwab, C Gargett

Gene profiling endometrial stem/progenitor cells in eutopic endometrium from women with endometriosis

2013-14

$50,000

REBECCA L COOPER MEDICAL RESEARCH FOUNDATION

EQUIPMENT GRANT

G Polglase, K Crossley, T Moss, M Tolcos

Protecting the brain from external factors at preterm birth

2012

$22,000

ROYAL AUSTRALASIAN COLLEGE OF PHYSICIANS (RACP)

RACP ARNOTT RESEARCH ENTRY SCHOLARSHIP IN CANCER RESEARCH

T Leong

2012

$30,000

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

FOUNDATION FOR SURGERY RESEARCH SCHOLARSHIP

D Oehme

2013

$45,000

SCOTTISH COT DEATH TRUST (SCOTLAND UK)

PROJECT GRANT

R Horne, F Wong, S Yiallourou, N Brew

2013-14

GBP60,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

STILLBIRTH FOUNDATION AUSTRALIA

PROJECT GRANT

M Davies, E Wallace

Maternal ethnicity and disparities in stillbirth

2013

$31,516

VICTORIAN LIFE SCIENCES COMPUTATION INITIATIVE (VLSCI)

TOP-UP SCHOLARSHIP

S Forster

2012-2014

$5,833

WALTER COTTMAN ENDOWMENT FUND

PROJECT GRANT

S Miller

Cord blood stem cells to reduce brain injury after birth asphyxia

2012

$15,360

MONASH UNIVERSITY

MONASH RESEARCHER ACCELERATOR (MRA) PROGRAM

M McKenzie

2013-14

$70,000

T Moss

2013-14

$70,000

Stefan White

2013-14

$70,000

FACULTY OF MEDICINE NURSING & HEALTH SCIENCES STRATEGIC GRANTS

J Ferrand, R Ferrero, D Philpott, T Kufer

Production of tools to study NLRC5 role and expression

2012-13

$14,200

A Irving

A role for actin-regulation in the immune clearance of infection

2013

$45,000

M Siew

Can resuscitation at birth lead to brain damage?

2013

$15,000

F Wong, A Edwards, S Menahem, A Veldman, D Schranz

Fetal cardiac intervention of congenital heart disease

2012

$54,677

FACULTY OF MEDICINE NURSING & HEALTH SCIENCES BRIDGING FELLOWSHIP

H Tye

2013

$35,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

RESEARCH AGREEMENTS

AUSTRALIAN PORK LTD

J St John

Defining the role of mitochondrial DNA in pig fertility

2012-14

$53,825

MEI PHARMA (MARSHALL EDWARDS INC PHARMACEUTICALS)

M McKenzie

Examining the effects of ME-344 on mitochondrial metabolism.

2013

$48,089

MESOBLAST LTD

G Jenkin

A study to evaluate the safety and efficacy of different formulations of STRO-3+ immunoselected allogeneic mesenchymal precursor cells on the repair and reconstitution of the extracellular matrix

2012

$681,111

G Jenkin

Evaluation of the safety and tolerability of a single high dose intravenous infusion of allogeneic mesenchymal precursor cells (MPCs) in sheep

2012

$207,363

OPSONA THERAPEUTICS (DUBLIN)

B Jenkins

TLR2 as a therapeutic target in gastric cancer

2012

$58,750 (EUR47,000)

OVASCIENCE INC

J St John, M McKenzie, D Walker, M Wallace, M Black

Determining the safety of homologous mitochondrial transfer

2013-2015

$997,260

PARANTA BIOSCIENCES

E Wallace, R Lim

Exogenous follistatin in a mouse model of bleomycin-induced fibrosis

2012

$23,193

TRANS TASMAN COMMERCIALISATION FUND

T Johns

Commercialisation of therapeutic antibodies

2012-13

$250,000

GRANT FUNDING AWARDED AND RECEIVED (CONTINUED)

AWARDS

MIMR HIGHEST PROFILE PUBLICATION AWARD, 2012

Tye H, Kennedy CL, Najdovska M, McLeod L, McCormack W, Hughes N, Dev A, Sievert W, Ooi CH, Ishikawa TO, Oshima H, Bhathal PS, Parker AE, Oshima M, Tan P, Jenkins BJ

(2012) STAT3-driven upregulation of TLR2 promotes gastric tumorigenesis independent of tumor inflammation. Cancer Cell 22:466-478.

MIMR POSTGRADUATE SYMPOSIUM

1st Prize

R Galinsky
L Nisbet
S Forster

Runner up Prize

M Skubisz

Team Player Award

D Ulrich

MIMR 3 MINUTE THESIS COMPETITION

1st Prize

L Nisbet

2nd Prize

S Gurusinghe

3rd Prize

L McKenzie

MONASH UNIVERSITY AWARDS

1st Prize Oral Presentation Award, 2012 Postgraduate Student Symposium, Department of Anatomy and Developmental Biology

A Atik

CSL PhD Prize, Department of Microbiology, Monash University.

M Hutton

Mollie Holman Medal, Monash University Best PhD Thesis 2012

G Schmoelzer

Monash Research Graduate School Postgraduate Publication Award

B O'Connell

Postgraduate Excellence Award for Outstanding Academic Merit

D Ulrich

SOUTHERN HEALTH RESEARCH WEEK

Poster Prizes

1st Prizes

K Fyfe
H Tye
T Yawno

2nd Prizes

J Lang
S Sinni

3rd Prizes

T Yawno
A Atik
K Fyfe

Poster Presentation

3rd Prize

A Atik

OTHER AWARDS

J Aridas

The Cerebral Palsy Alliance Award, 17th Annual Meeting, Perinatal Society of Australia and New Zealand, Sydney

Best Presentation by a PhD student (Early), Fetal & Neonatal Workshop, Sydney

A Atik

Australian Neuroscience Society (ANS) 2012: Student Travel Award

Poster Presentation Award, 8th Hershey Conference on Developmental Brain Injury 2012

Early Research Career Travel Grant, Perinatal Society of Australia and New Zealand (PSANZ), 2012

Perinatal Society of Australia and New Zealand (PSANZ) 2012: New Investigator Oral Presentation Award

The New Investigator award for best presentation (Basic Science), 17th Annual Meeting, Perinatal Society of Australia and New Zealand, Sydney

B Barakat

Best Postdoctoral Oral Presentation, 5th Annual ANZ Cell and Developmental Biology Meeting, 2 November, 2012

S Barton

The Cerebral Palsy Alliance Special Commendation, 17th Annual Meeting, Perinatal Society of Australia and New Zealand, Sydney

N De Weerd

Cytokines 2012 Travel Award, International Society for Interferon and Cytokine Research, Bethesda MD, USA

J Deane

Best Postdoctoral Oral Presentation award, Society for Reproductive Biology, Endometriosis Symposium, Australian Health and Medical Research (AH&MR) Congress, Adelaide Convention Centre, 23 - 26 November 2012

AWARDS (CONTINUED)

A Finkel

Best Life Sciences Computational Biology Presentation, Annual Undergraduate Research Opportunities Program (UROP) Conference Day, 18 July 2012

K Fyfe

The New Investigator award for best presentation (Neonatology), 17th Annual Meeting, Perinatal Society of Australia and New Zealand, Sydney

New Investigator Award, Australasian Sleep Association's (ASA) Annual Scientific Meeting, Darwin, 10-13 October

A Irving

The Sidney & Joan Pestka Award for Excellence in Interferon Research, International Cytokine Society and the International Society for Interferon and Cytokine Research (ISICR), Geneva, 11 - 15 September, 2012

B Jenkins

Monash Comprehensive Cancer Consortium Travel Award

A Miller

Best Lung Cancer Presentation at the 2012 Annual Scientific Meeting, Thoracic Society of Australian and New Zealand, Canberra

L Nisbet

International Trainee Travel Award, American Thoracic Society Conference, San Francisco

Australian Heart Foundation Travel Award

Childhood Sleep Disorders and Development Section Investigator Award, American Academic Sleep Societies meeting, Boston

Top presentation, Paediatric Poster section, Australasian Sleep Association's (ASA) Annual Scientific Meeting, Darwin, 10-13 October

G Polglase

Curosurf Innovative Scientist Award - to attend the 27th International Workshop On Surfactant Replacement: Lisbon, Portugal

K Sobotka

2nd Best Paper Travel Award - International Pediatric Research Foundation

M Tate

Cytokines 2012 Travel Award, International Society for Interferon and Cytokine Research, Bethesda MD, USA

A Vlahandonis

Top presentation, Paediatric Poster section, Australasian Sleep Association's (ASA) Annual Scientific Meeting, Darwin, 10-13 October

F Wong

Best Oral Presentation Winner, 2012 Pediatric and Adult Interventional Cardiac Symposium, Chicago, USA

S Yiallourou

New Investigator Award, International Paediatric Sleep Association Meeting in Manchester, England, November, 2012

H Yim

The Milstein Travel Award, International Society for Interferon and Cytokine Research, Bethesda MD, USA

SUPPORTERS

We would like to acknowledge the support of the following organisations and individuals during 2012.

DONORS, SUPPORTERS AND SPONSORS

- 5point Foundation
- American Asthma Foundation
- Association for International Cancer Research
- Asthma Foundation of Victoria
- Australasian Gynaecological Endoscopy & Surgery Society Ltd (AGES)
- Australasian Sarcoma Study Group
- Australian Cancer Research Foundation (ACRF)
- Australia Cystic Fibrosis Research Trust
- Bed Bath N' Table
- Cancer Australia
- Cancer Council Victoria
- Cerebral Palsy Foundation
- Mr Douglas Chandler
- Commonwealth Government Department of Innovation, Industry, Science and Research (DIISR)
- Mrs Mary Conigrave
- Ms Tonya Court
- Mr Laurence Crouch
- Cure Cancer Australia Foundation
- CryoLogic Pty Ltd
- Dairy Australia Ltd (Australian Commonwealth Government)
- Dairy Futures CRC
- Mr Vincente Bicudo De Castro
- Department of Business and Innovation (DoBI)
- Mr Graeme Dodson
- Enfa Pty Ltd
- Ms Janet Duncan
- Mr Ray Ferguson
- Mr Peter Foster
- Foundation Study For Infant Deaths UK
- Associate Professor Caroline Gargett
- H & K Johnston Family Foundation
- Mrs Jean Hadges
- Harold Mitchell Foundation
- Health Research Council of New Zealand
- Associate Professor Mark Hedger
- Helen McPherson Smith Trust
- Mr Rodney Hill
- ICMS Australasia Pty Ltd
- Ms Kwong Ka Wai
- Kitaya Holdings Pty Ltd
- Dinah & Henry Krongold & Family
- Leukemia & Lymphoma Society, USA
- Mr Robert Liddle
- Mr John Little
- Ms Margaret Lothian
- Mr Kevin Luscombe
- Dr Ashley Mansell
- Mr Eric Margetts
- Mr Neville Marriott
- Mr Lance Matheson
- National Institutes of Health USA
- P & M Harbig (Holdings) Pty Ltd
- Ms Caroline Page
- Perinatal Society of Australia and New Zealand
- Pfizer Pharmaceuticals
- Prostate Cancer Foundation of Australia
- Mr Anthony Pyman
- Mr Brian Randall
- RANZCOG Research Foundation
- Mrs Jill Ross-Perrier
- Mr Martin Sachs
- Mr Greg Shalit
- SIDS & Kids Victoria
- Mrs Janette Smith
- Ms Valerie Smith

SUPPORTERS (CONTINUED)

- State Council of Chinese Government
- Sylvia and Charles Viertel Charitable Foundation
- Emeritus Professor Ronald Taft
- The BUPA Foundation
- The Cass Foundation Ltd
- The Honourable Allan McDonald
- Therapeutic Innovation Australia
- Mr Don Upfill
- US Department of Defense
- Victorian Cancer Agency
- Mrs Baiba Warhaft
- Mr Robert Wilkinson
- Mr Neville Wright
- Ms Denise Young
- Estate of Wendel Bernard John Zwart
- And others who wish to remain anonymous

RON EVANS GOLF DAY SUPPORTERS

- 3 Point Motors
- Mr Noel Allanson
- Mr Brett Amezdroz
- ATC Insurance Solutions Pty Ltd
- Mr Terry & Mrs Deanna Atkins
- Mr Garry Austin
- Australian Football League
- Mr Tim Barnett
- BJS Insurance Brokers Pty Ltd
- Mr Michael Carroll
- Mr Paul Chen
- Mr Ken Cush
- Drummond Foundation
- Mrs Samantha Edleston
- Mr David Elia
- Essendon Football Club
- Evans & Partners
- Mrs Andrea Evans
- Mr David & Mrs Sonya Evans
- Mr Richard Evans
- Mr John Fox
- Foxtel
- Mr Ken Fraser
- Mr Thomas Gwynne
- Mr Patrick Hardwick
- Healthscope
- KPMG
- Mr Bill Kelty
- Mr Travis Kemp
- Mr Peter & Mrs Sue Maloney
- Nine Network Australia Pty Limited
- Mrs Donna Northover
- Mr Graham Potts
- Mr Simon Ritchie
- Salerno Property Pty Ltd
- Mr Darren Scammell
- Seven Network
- Mr Ned Slater
- Mr Geoffrey Slattery
- Mr Mal Speed
- Spotless Group Limited
- Strategic Financial Management
- Ted's Camera Stores (Vic) Pty Ltd
- Professor Adrian Walker
- Mr Terry Webber
- Mr Bruce Williams
- Mr Craig Willis
- Mr Peter Wilson
- Mr Trevor Wright

PATRONS CLUB MEMBERS

- Mr Ian Allen OAM
- Mr John Baldwin
- Mr Rex Beaconsfield
- Mr Frank Costa OAM
- Mr Clyde Davenport
- Professor David de Kretser AC
- Mr Michael Drapac
- Dr Alan Finkel AM
- Mrs Greta Grossberg
- Mr Anthony Heffernan
- Mr Barry Landau
- Mr Michael Naphtali AO
- Mr George Pappas
- Mr David Smorgon OAM
- Adjunct Professor Adrian Walker
- Professor Bryan Williams
- Mr Ross Wilson
- Mr Graeme Wise

GIFTS IN MEMORY OF

- Mr Robert Frederick Clark
- Mr Thomas Cuthbertson
- Mr Ronald Krongold
- Mr Carmelo Scarpignato

PUBLICATIONS

Book Chapters
Journal Articles
Review Articles

PUBLICATIONS

BOOK CHAPTERS

Ferrero RL, Wilson JE, Sutton P (2012) Mouse models of helicobacter-induced gastric cancer: use of cocarcinogens. In *Helicobacter Species*. Houghton J, ed. New York, USA: Humana Press (Springer Science & Business Media). pp 157-173.

Gargett CE, Masuda H, Weston G (2012) Stem cells in endometriosis. In *Endometriosis: Science and Practice*. Giudice LC, Evers JL, Healy DL, eds. West Sussex, UK: Wiley-Blackwell. pp 130-139.

Goldschlager T, Rosenfeld JV (2012) Anatomy of the head and neck. In *Practical Management of Head and Neck Injury.* Rosenfeld JV, ed. Sydney, Australia: Elsevier. pp 10-38.

Goldschlager T, Rosenfeld JV (2012) Pathophysiology of traumatic brain injury. In *Practical Management of Head and Neck Injury*. Rosenfeld JV, ed. Sydney, Australia: Elsevier. pp 38-55.

Gough DJ, Sehgal P, Levy DE (2012) Nongenomic functions of STAT3. In *Jak-Stat Signaling: From Basics to Disease*. Decker T, Müller M, eds. Wein: Springer-Verlag GmbH. pp 91-98.

Hedger MP (2012) Immune privilege of the testis – meaning, mechanisms and manifestations. In *Infection, Immune Homeostasis and Immune Privilege*. Stein-Streilein J, ed. New York, USA: Springer. pp 31-52.

O'Donnell L, de Kretser DM (2012) Phenotypic assessment of male fertility status in transgenic animal models. In *Methods in Mol Biol, Spermiogenesis and Spermatogenesis.* Carrell DT, Aston KI, eds. New York, USA: Humana Press. pp 531-548.

Ohnesorg T, Eggers S, White SJ (2012) Detecting DNaseI-hypersensitivity sites with MLPA. In *Gene Regulatory Networks: Methods and Protocols.* Deplancke B, Gheldolf N, eds. New York, USA: Springer Science+Business Media. pp 201-210.

Vlahandonis A, Walter LM, Yiallourou SR, Horne RSC (2012) Autonomic and cardiovascular regulation during sleep. In *Sleep Disordered Breathing in Children: A Comprehensive Clinical Guide to Evaluation and Treatment.* Kheirandish-Gozal L, Gozal D, eds. New York, USA: Humana Press. pp 85-103.

White SJ, Sinclair AH (2012) The molecular basis of gonadal development and disorders of sex development. In *Disorders of Sex Development: An Integrated Approach to Management.* Hutson JM, Warne G, Grover S, eds. Berlin, Germany: Springer-Verlag. pp 1-7.

JOURNAL ARTICLES

Aljofan M, Singh H, Ho H, Xie S, Zhu Y, Sun Z, Guo X, Wang J, Nie G (2012) Inhibition of proprotein convertase 5/6 activity: potential for nonhormonal women-centered contraception. *Contraception* 85:602-610.

Allan CA, Collins VR, Frydenberg M, McLachlan RI, Matthiesson KL (2012) Monitoring cardiovascular health in men with prostate cancer treated with androgen deprivation therapy. *Int J Urol Nurs* 6:35-41.

Andrews PC, Busse M, Deacon GB, Ferrero RL, Junk PC, Maclellan JG, Vom A (2012) Remarkable in vitro bactericidal activity of bismuth(iii) sulfonates against Helicobacter pylori. *Dalton Trans* 41:11798-11806.

Andrews PC, Ferrero RL, Junk PC, Maclellan JG, Peiris RM (2012) Bismuth(III) thiobenzoates and their activity against Helicobacter pylori. *Aus J Chem* 65:883-891.

Ang H, Veldman A, Lewis A, Carse E, Wong FY (2012) Procedural training opportunities for basic pediatric trainees during a 6-month rotation in a level III perinatal centre in Australia. *J Matern Fetal Neonatal Med* 25:2428-2431.

Ascher DB, Polekhina G, Parker MW (2012) Crystallization and preliminary X-ray diffraction analysis of human endoplasmic reticulum aminopeptidase 2. *Acta Crystallogr Sect F Struct Biol Cryst Commun* 68:468-471.

Bach KP, Kuschel CA, Hooper SB, Bertram J, McKnight S, Peachey SE, Zahra VA, Flecknoe SJ, Oliver M, Wallace MJ, Bloomfield FH (2012) High bias gas flow rates increase lung injury in the ventilated preterm lamb. *PLoS One* 7:e47044.

PUBLICATIONS (CONTINUED)

Baldi DL, Higginson EE, Hocking DM, Praszkier J, Cavaliere R, James CE, Bennett-Wood V, Azzopardi KI, Turnbull L, Lithgow T, Robins-Browne RM, Whitchurch CB, Tauschek M (2012) The type II secretion system and its ubiquitous lipoprotein substrate, SslE, are required for biofilm formation and virulence of enteropathogenic Escherichia coli. *Infect Immun* 80:2042-2052.

Bender JK, Praszkier J, Wakefield MJ, Holt K, Tauschek M, Robins-Browne RM, Yang J (2012) Involvement of PatE, a prophage-encoded AraC-like regulator, in the transcriptional activation of acid-resistance pathways of enterohemorrhagic Escherichia coli strain EDL933. *Appl Environ Microbiol* 78:5083-5092.

Berry CA, Suki B, Polglase GR, Pillow JJ (2012) Variable ventilation enhances ventilation without exacerbating injury in preterm lambs with respiratory distress syndrome. *Pediatr Res* 72:384-392.

Bidwell BN, Slaney CY, Withana NP, Forster S, Cao Y, Loi S, Andrews D, Mikeska T, Mangan NE, Samarajiwa SA, de Weerd NA, Gould J, Argani P, Moller A, Smyth MJ, Anderson RL, Hertzog PJ, Parker BS (2012) Silencing of Irf7 pathways in breast cancer cells promotes bone metastasis through immune escape. *Nat Med* 18:1224-1231.

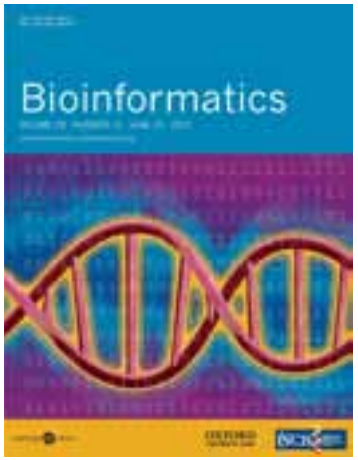
Biggs SN, Kennedy JD, Martin AJ, van den Heuvel CJ, Lushington K (2012) Psychometric properties of an omnibus sleep problems questionnaire for school-aged children. *Sleep Med* 13:390-395.

Biggs SN, Walter LM, Nisbet LC, Jackman AR, Anderson V, Nixon GM, Davey MJ, Trinder J, Hoffmann R, Armitage R, Horne RS (2012) Time course of EEG slow-wave activity in pre-school children with sleep disordered breathing: a possible mechanism for daytime deficits? *Sleep Med* 13:999-1005.

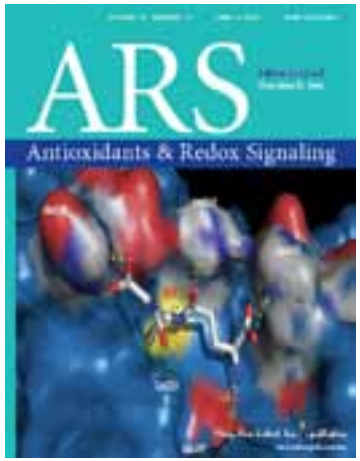
Cantsilieris S, White SJ, Richardson AJ, Guymer RH, Baird PN (2012) Comprehensive analysis of copy number variation of genes at chromosome 1 and 10 loci associated with late age related macular degeneration. *PLoS One* 7:e35255.

Chan RW, Kaitu'u-Lino T, Gargett CE (2012) Role of label retaining cells in estrogen-induced endometrial regeneration. *Reprod Sci* 19:102-114.

Clemons NJ, Wang DH, Croagh D, Tikoo A, Fennell CM, Murone C, Scott AM, Watkins DN, Phillips WA (2012) Sox9 drives columnar differentiation of esophageal squamous epithelium: a possible role in the pathogenesis of Barrett's esophagus. *Am J Physiol Gastrointest Liver Physiol* 303:G1335–G1346.



Conway T, Wazny J, Bromage A, Tymms M, Sooraj D, Williams ED, Beresford-Smith B (2012) Xenome--a tool for classifying reads from xenograft samples. *Bioinformatics* 28:i172-i178.



Coso S, Harrison I, Harrison CB, Vinh A, Sobey CG, Drummond GR, Williams ED, Selemidis S (2012) NADPH oxidases as regulators of tumor angiogenesis: current and emerging concepts. *Antioxid Redox Signal* 16:1229-1247.

Coso S, Zeng Y, Opeskin K, Williams ED (2012) Vascular endothelial growth factor receptor-3 directly interacts with phosphatidylinositol 3-kinase to regulate lymphangiogenesis. *PLoS One* 7:e39558.

PUBLICATIONS (CONTINUED)

Costley PL, East CE (2012) Oxytocin augmentation of labour in women with epidural analgesia for reducing operative deliveries. *Cochrane DB Syst Rev* 5:CD009241.

Craythorn RG, Winnall WR, Lederman F, Gold EJ, O'Connor AE, de Kretser DM, Hedger MP, Rogers PA, Girling JE (2012) Progesterone stimulates expression of follistatin splice variants Fst288 and Fst315 in the mouse uterus. *Reprod Biomed Online* 24:364-374.

Crossley KJ, Allison BJ, Polglase G, Morley CJ, Harding R, Davis PG, Moss TJ, Hooper SB (2012) Effects of caffeine on renal and pulmonary function in preterm newborn lambs. *Pediatr Res* 72:19-25.

Dando SJ, Nitsos I, Kallapur SG, Newnham JP, Polglase GR, Pillow JJ, Jobe AH, Timms P, Knox CL (2012) The role of the multiple banded antigen of Ureaplasma parvum in intra-amniotic infection: major virulence factor or decoy? *PLoS One* 7:e29856.

de Boer CM, Eini R, Gillis AM, Stoop J, Looijenga LHJ, White SJ (2012) DICER1 RNase IIIb domain mutations are infrequent in testicular germ cell tumours. *BMC Res Notes* 5:569.

Deane JA, Abeynaike LD, Norman MU, Wee JL, Kitching AR, Kubes P, Hickey MJ (2012) Endogenous regulatory T cells adhere in inflamed dermal vessels via ICAM-1: association with regulation of effector leukocyte adhesion. *J Immunol* 188:2179-2188.

Deane JA, Ricardo SD (2012) Emerging roles for renal primary cilia in epithelial repair. *Int Rev Cell Mol Biol* 293:169-193.

Dickinson H, Milton P, Jenkin G (2012) The isolation and characterization of putative mesenchymal stem cells from the spiny mouse. *Cytotechnology* 64:591-599.

Donoghue JF, McGavigan CJ, Lederman FL, Cann LM, Fu L, Dimitriadis E, Girling JE, Rogers PA (2012) Dilated thin-walled blood and lymphatic vessels in human endometrium: a potential role for VEGF-D in progestin-induced break-through bleeding. *PLoS One* 7:e30916.

Drysdale H, Ranasinha S, Kendall A, Knight M, Wallace EM (2012) Ethnicity and the risk of late-pregnancy stillbirth. *Med J Aust* 197:278-281.

Dubsky S, Hooper SB, Siu KK, Fouras A (2012) Synchrotron-based dynamic computed tomography of tissue motion for regional lung function measurement. *J R Soc Interface* 9:2213-2224.

East CE, Begg L, Henshall NE, Marchant PR, Wallace K (2012) Local cooling for relieving pain from perineal trauma sustained during childbirth. *Cochrane DB Syst Rev* 5:CD006304.

East CE, Sherburn M, Nagle C, Said J, Forster D (2012) Perineal pain following childbirth: prevalence, effects on postnatal recovery and analgesia usage. *Midwifery* 28:93-97.

Erbas B, Dharmage SC, O'Sullivan M, Akram M, Newbigin EJ, Taylor PE, Vicendese D, Hyndman RJ, Bardin PG, Tang ML, Abramson MJ (2012) A case-crossover design to examine the role of aeroallergens and respiratory viruses on childhood asthma exacerbations requiring hospitalization: the Mapcah study. *J BioMet Biostat* 5:7.

Feng H, Hu B, Jarzynka MJ, Li Y, Keezer S, Johns TG, Tang CK, Hamilton RL, Vuori K, Nishikawa R, Sarkaria JN, Fenton T, Cheng T, Furnari FB, Cavenee WK, Cheng SY (2012) Phosphorylation of dedicator of cytokinesis 1 (Dock180) at tyrosine residue Y722 by Src family kinases mediates EGFRvIII-driven glioblastoma tumorigenesis. *Proc Natl Acad Sci USA* 109:3018-3023.

Fleiss B, Parkington HC, Coleman HA, Dickinson H, Yawno T, Castillo-Melendez M, Hirst JJ, Walker DW (2012) Effect of maternal administration of allopregnanolone before birth asphyxia on neonatal hippocampal function in the spiny mouse. *Brain Res* 1433:9-19.

Fonseca DJ, Ojeda D, Lakhal B, Braham R, Eggers S, Turbitt E, White S, Landolsi H, Elghezal H, Saad A, Restrepo CM, Fellous M, Sinclair A, Koopman P, Laissue P (2012) CITED2 mutations potentially cause idiopathic premature ovarian failure. *Transl Res* 160:384-388.

Forrester HB, Li J, Hovan D, Ivashkevich AN, Sprung CN (2012) DNA repair genes: alternative transcription and gene expression at the exon level in response to the DNA damaging agent, ionizing radiation. *PLoS One* 7:e53358.

Fouras A, Allison BJ, Kitchen MJ, Dubsky S, Nguyen J, Hourigan K, Siu KK, Lewis RA, Wallace MJ, Hooper SB (2012) Altered lung motion is a sensitive indicator of regional lung disease. *Ann Biomed Eng* 40:1160-1169.

PUBLICATIONS (CONTINUED)

Gantier MP, Stunden HJ, McCoy CE, Behlke MA, Wang D, Kaparakis-Liaskos M, Sarvestani ST, Yang YH, Xu D, Corr SC, Morand EF, Williams BR (2012) A miR-19 regulon that controls NF-κB signaling. *Nucleic Acids Res* 40:8048-8058.

Germann M, Wetterwald A, Guzman-Ramirez N, van der Pluijm G, Culig Z, Cecchini MG, Williams ED, Thalmann GN (2012) Stem-like cells with luminal progenitor phenotype survive castration in human prostate cancer. *Stem Cells* 30:1076-1086.

Ghildyal R, Jans DA, Bardin PG, Mills J (2012) Protein-protein interactions in RSV assembly: potential targets for attenuating RSV strains. *Infect Disord Drug Targets* 12:103-109.

Ghosh P, Moore R, Vernon-Roberts B, Goldschlager T, Pascoe D, Zannettino A, Gronthos S, Itescu S (2012) Immunoselected STRO-3+ mesenchymal precursor cells and restoration of the extracellular matrix of degenerate intervertebral discs. *J Neurosurg Spine* 16:479-488.

Greenall SA, Gherardi E, Liu Z, Donoghue JF, Vitali AA, Li Q, Murphy R, Iamele L, Scott AM, Johns TG (2012) Non-agonistic bivalent antibodies that promote c-MET degradation and inhibit tumor growth and others specific for tumor related c-MET. *PLoS One* 7:e34658.

Greenhill CJ, Gould J, Ernst M, Jarnicki A, Hertzog PJ, Mansell A, Jenkins BJ (2012) LPS hypersensitivity of gp130 mutant mice is independent of elevated haemopoietic TLR4 signaling. *Immunol Cell Biol* 90:559-563.

Heffernan C, Sumer H, Guillemin GJ, Manuelpillai U, Verma PJ (2012) Design and screening of a glial cell-specific, cell penetrating peptide for therapeutic applications in multiple sclerosis. *PLoS One* 7:e45501.

Heffernan C, Sumer H, Malaver-Ortega LF, Verma PJ (2012) Temporal requirements of cMyc protein for reprogramming mouse fibroblasts. *Stem Cells Int* 2012:541014.

Hersmus R, Stoop H, White SJ, Drop SL, Oosterhuis JW, Incrocci L, Wolffenbuttel KP, Looijenga LH (2012) Delayed recognition of disorders of sex development (DSD): a missed opportunity for early diagnosis of malignant germ cell tumors. *Int J Endocrinol* 2012:671209.

Hersmus R, van der Zwan YG, Stoop H, Bernard P, Oosterhuis JW, Brüggenwirth HT, Boer S, White SJ, Wolffenbuttel KP, McElreavy K, Mannens MMAM, Drop SLS, Harley VR, Looijenga LHJ (2012) A 46,XY female DSD patient with bilateral gonadoblastoma, a novel SRY missense mutation - combined with a WT1 KTS splice-site mutation. *PLoS One* 7:e40858.

Hillman NH, Moss TJ, Nitsos I, Jobe AH (2012) Moderate tidal volumes and oxygen exposure during initiation of ventilation in preterm fetal sheep. *Pediatr Res* 72:593-599.

Hodges R, Bardien N, Wallace E (2012) Acceptability of stem cell therapy by pregnant women. *Birth* 39:91-97.

Hodges RJ, Jenkin G, Hooper SB, Allison B, Lim R, Dickinson H, Miller SL, Vosdoganes P, Wallace EM (2012) Human amnion epithelial cells reduce ventilation-induced preterm lung injury in fetal sheep. *Am J Obstet Gynecol* 206:448.e8-15.

Hogg K, Young JM, Oliver EM, Souza CJ, McNeilly AS, Duncan WC (2012) Enhanced thecal androgen production is prenatally programmed in an ovine model of polycystic ovary syndrome. *Endocrinology* 153:450-461.

Holden CA, Lin V (2012) Network structures and their relevance to the policy cycle: a case study of The National Male Health Policy of Australia. *Soc Sci Med* 74:228-235.

Hutton ML, Kaparakis-Liaskos M, Ferrero RL (2012) The use of AlbuMAX II® as a blood or serum alternative for the culture of Helicobacter pylori. *Helicobacter* 17:68-76.

Irving AT, Wang D, Vasilevski O, Latchoumanin O, Kozer N, Clayton AHA, Szczepny A, Morimoto H, Xu D, Williams BRG, Sadler AJ (2012) Regulation of actin dynamics by protein kinase R control of gelsolin enforces basal innate immune defense. *Immunity* 36:795-806.

Ischia JJ, Pang CY, Tay YK, Suen CF, Aw HC, Frydenberg M (2012) Active surveillance for prostate cancer: an Australian experience. *BJU Int* 109 Suppl 3:40-43.

Jackman AR, Biggs SN, Walter LM, Embuldeniya US, Davey MJ, Nixon GM, Anderson V, Trinder J, Horne RSC (2012) Sleep-disordered breathing in preschool children is associated with behavioral, but not cognitive, impairments. *Sleep Med* 13:621-631.

Jamison RA, Armitage JA, Carberry J, Kitchen MJ, Hooper SB, Fouras A (2012)

PUBLICATIONS (CONTINUED)

Functional imaging to understand biomechanics: a critical tool for the study of biology, pathology and the development of pharmacological solutions. *Curr Pharm Biotechnol* 13:2128-2140.

Johnson MP, Brennecke SP, East CE, Goring HH, Kent JW, Jr., Dyer TD, Said JM, Roten LT, Iversen AC, Abraham LJ, Heinonen S, Kajantie E, Kere J, Kivinen K, Pouta A, Laivuori H, Austgulen R, Blangero J, Moses EK (2012) Genome-wide association scan identifies a risk locus for preeclampsia on 2q14, near the inhibin, beta B gene. *PLoS One* 7:e33666.

Joosten SA, Hamza K, Sands S, Turton A, Berger P, Hamilton G (2012) Phenotypes of patients with mild to moderate obstructive sleep apnoea as confirmed by cluster analysis. *Respirology* 17:99-107.

Joshi MS, Tong L, Cook AC, Schanbacher BL, Huang H, Han B, Ayers LW, Bauer JA (2012) Increased myocardial prevalence of C-reactive protein in human coronary heart disease: direct effects on microvessel density and endothelial cell survival. *Cardiovasc Pathol* 21:428-435.

Kaitu'u-Lino TJ, Palmer KR, Whitehead CL, Williams E, Lappas M, Tong S (2012) MMP-14 is expressed in preeclamptic placentas and mediates release of soluble endoglin. *Am J Pathol* 180:888-894.

Kaitu'u-Lino TJ, Ye L, Salamonsen LA, Girling JE, Gargett CE (2012) Identification of label-retaining perivascular cells in a mouse model of endometrial decidualization, breakdown, and repair. *Biol Reprod* 86:184.

Kelly RD, Mahmud A, McKenzie M, Trounce IA, St John JC (2012) Mitochondrial DNA copy number is regulated in a tissue specific manner by DNA methylation of the nuclear-encoded DNA polymerase gamma A. *Nucleic Acids Res* 40:10124-10138.

Khairuddin N, Gantier MP, Blake SJ, Wu SY, Behlke MA, Williams BR, McMillan NA (2012) siRNA-induced immunostimulation through TLR7 promotes antitumoral activity against HPV-driven tumors in vivo. *Immunol Cell Biol* 90:187-196.

Khodadadi K, Sumer H, Pashaiasl M, Lim S, Williamson M, Verma PJ (2012) Induction of pluripotency in adult equine fibroblasts without c-MYC. *Stem Cells Int* 2012:429160.

Kolosov A, Goodchild CS, Williams ED, Cooke I (2012) Flupirtine enhances the anti-hyperalgesic effects of morphine in a rat model of prostate bone metastasis. *Pain Med* 13:1444-1456.

Koundouras S, Verma PJ (2012) Significant enrichment of Y-bearing chromosome human spermatozoa using a modified centrifugation technique. *Int J Androl* 35:880-886.

Koziolek EJ, Donoghue JF, Bentley JD, Lovrecz G, Dolezal O, Ward CW, Rothacker J, Nice EC, Burgess AW, Hafner M, Johns TG, Adams TE (2012) A high-affinity ErbB4Fc fusion protein is a potent antagonist of heregulin mediated receptor activation. *Growth Factors* 30:310-319.

PUBLICATIONS (CONTINUED)

Kronenberger B, Rudloff I, Bachmann M, Brunner F, Kapper L, Filmann N, Waidmann O, Herrmann E, Pfeilschifter J, Zeuzem S, Piiper A, Muhl H (2012) Interleukin-22 predicts severity and death in advanced liver cirrhosis: a prospective cohort study. *BMC Med* 10:102.

Kuypers E, Collins JJ, Jellema RK, Wolfs TG, Kemp MW, Nitsos I, Pillow JJ, Polglase GR, Newnham JP, Germeraad WT, Kallapur SG, Jobe AH, Kramer BW (2012) Ovine fetal thymus response to lipopolysaccharide-induced chorioamnionitis and antenatal corticosteroids. *PLoS One* 7:e38257.

Kuypers E, Collins JJ, Kramer BW, Ofman G, Nitsos I, Pillow JJ, Polglase GR, Kemp MW, Newnham JP, Gavilanes AW, Nowacki R, Ikegami M, Jobe AH, Kallapur SG (2012) Intra-amniotic LPS and antenatal betamethasone: inflammation and maturation in preterm lamb lungs. *Am J Physiol Lung Cell Mol Physiol* 302:L380-389.

Lee JE, Yang YM, Liang FX, Gough DJ, Levy DE, Sehgal PB (2012) Nongenomic STAT5-dependent effects on Golgi apparatus and endoplasmic reticulum structure and function. *Am J Physiol Cell Physiol* 302:C804-820.

Leong DW, Komen JC, Hewitt CA, Arnaud E, McKenzie M, Phipson B, Bahlo M, Laskowski A, Kinkel SA, Davey GM, Heath WR, Voss AK, Zahedi RP, Pitt JJ, Chrast R, Sickmann A, Ryan MT, Smyth GK, Thorburn DR, Scott HS (2012) Proteomic and metabolomic analyses of a mitochondrial complex I deficient mouse model generated by spontaneous B2 Short Interspersed Nuclear Element (SINE) insertion into the NADH dehydrogenase (ubiquinone) Fe-S protein 4 (Ndufs4) gene. *J Biol Chem* 287:20652-20663.

Li S, Nitsos I, Polglase GR, Braun T, Moss TJ, Newnham JP, Challis JR (2012) The effects of dexamethasone treatment in early gestation on hypothalamic-pituitary-adrenal responses and gene expression at 7 months of postnatal age in sheep. *Reprod Sci* 19:260-270.

Ling HY, Edwards AM, Gantier MP, Deboer KD, Neale AD, Hamill JD, Walmsley AM (2012) An interspecific Nicotiana hybrid as a useful and cost-effective platform for production of animal vaccines. *PLoS One* 7:e35688.

Liu J, Balehosur D, Murray B, Kelly JM, Sumer H, Verma PJ (2012) Generation and characterization of reprogrammed sheep induced pluripotent stem cells. *Theriogenology* 77:338-346 e331.

Liu YH, Vaghjiani V, Tee J, To K, Cui P, Oh DY, Manuelpillai U, Toh BH, Chan J (2012) Amniotic epithelial cells from the human placenta potently suppress a mouse model of multiple sclerosis. *PLos One* 7:e35758.

Lu AB, Halim AA, Dendle C, Kotsanas D, Giles ML, Wallace EM, Buttery JP, Stuart RL (2012) Influenza vaccination uptake amongst pregnant women and maternal care providers is suboptimal. *Vaccine* 30:4055-4059.

Manuelpillai U, Lourensz D, Vaghjiani V, Tchongue J, Lacey D, Tee JY, Murthi P, Chan J, Hodge A, Sievert W (2012) Human amniotic epithelial cell transplantation induces markers of alternative macrophage activation and reduces established hepatic fibrosis. *PLoS One* 7:e38631.

Masuda H, Anwar SS, Buhring HJ, Rao JR, Gargett CE (2012) A novel marker of human endometrial mesenchymal stem-like cells. *Cell Transplant* 21:2201-2214.

McLachlan RI, Ishikawa T, Osianlis T, Robinson P, Merriner DJ, Healy D, de Kretser D, O'Bryan MK (2012) Normal live birth after testicular sperm extraction and intracytoplasmic sperm injection in variant primary ciliary dyskinesia with completely immotile sperm and structurally abnormal sperm tails. *Fertil Steril* 97:313-318.

Meltzer LJ, Biggs S, Reynolds A, Avis KT, Crabtree VM, Bevans KB (2012) The Children's Report of Sleep Patterns - Sleepiness Scale: a self-report measure for school-aged children. *Sleep Med* 13:385-389.

Melville JM, Bischof RJ, Meeusen EN, Westover AJ, Moss TJ (2012) Changes in fetal thymic immune cell populations in a sheep model of intrauterine inflammation. *Reprod Sci* 19:740-747.

Miles DC, van den Bergen JA, Wakeling SI, Anderson RB, Sinclair AH, Western PS (2012) The proto-oncogene Ret is required for male foetal germ cell survival. *Dev Biol* 365:101-109.

Miller SL, Sutherland AE, Supramaniam VG, Walker DW, Jenkin G, Wallace EM (2012) Antenatal glucocorticoids reduce growth in appropriately-grown and growth-restricted ovine fetuses, in a sex-specific manner. *Reprod Fertil Dev* 24:753-758.

PUBLICATIONS (CONTINUED)

Miller SL, Wallace EM, Walker DW (2012) Antioxidant therapies: a potential role in perinatal medicine. *Neuroendocrinology* 96:13-23.

Milton PL, Dickinson H, Jenkin G, Lim R (2012) Assessment of respiratory physiology of C57BL/6 mice following bleomycin administration using barometric plethysmography. *Respiration* 83:253-266.

Mitchell AJ, Yau B, McQuillan JA, Ball HJ, Too LK, Abtin A, Hertzog P, Leib SL, Jones CA, Gerega SK, Weninger W, Hunt NH (2012) Inflammasome-dependent IFN-γ drives pathogenesis in Streptococcus pneumonia meningitis. *J Immunol* 189:4970-4980.

Mockler JC, East CE (2012) Non-pharmacological and non-surgical interventions for managing retained placenta (Protocol). *Cochrane DB Syst Rev* 5:CD00984.

Moujalled DM, Cook WD, Lluis JM, Khan NR, Ahmed AU, Callus BA, Vaux DL (2012) In mouse embryonic fibroblasts, neither caspase-8 nor cellular FLICE-inhibitory protein (FLIP) is necessary for TNF to activate NF-kappaB, but caspase-8 is required for TNF to cause cell death, and induction of FLIP by NF-kappaB is required to prevent it. *Cell Death Differ* 19:808-815.

Murphy S, Chin S, Tan JL, Chan S, Jenkin G, Wallace EM, Lim R (2012) Human amnion epithelial cells do not abrogate pulmonary fibrosis in mice with impaired macrophage function. *Cell Transplant* 21:1477-1492.

Murphy SV, Lim R, Heraud P, Cholewa M, Le Gros M, de Jonge MD, Howard DL, Paterson D, McDonald C, Atala A, Jenkin G, Wallace EM (2012) Human amnion epithelial cells induced to express functional cystic fibrosis transmembrane conductance regulator. *PLoS One* 7:e46533.

Musk GC, Polglase GR, Song Y, Pillow JJ (2012) Impact of conventional breath inspiratory time during high-frequency jet ventilation in preterm lambs. *Neonatology* 101:267-273.

Naqvi S, Macdonald A, McCoy CE, Darragh J, Reith AD, Arthur JS (2012) Characterization of the cellular action of the MSK inhibitor SB-747651A. *Biochem J* 441:347-357.

New K, Flint A, Bogossian F, East C, Davies MW (2012) Transferring preterm infants from incubators to open cots at 1600 g: a multicentre randomised controlled trial. *Arch Dis Child Fetal Neonatal Ed* 97:F88-92.

Nguyen HP, Sprung CN, Gargett CE (2012) Differential expression of wnt signaling molecules between pre- and postmenopausal endometrial epithelial cells suggests a population of putative epithelial stem/progenitor cells reside in the basalis layer. *Endocrinology* 153:2870-2883.

Notini AJ, McClive PJ, Meachem SJ, van den Bergen JA, Western PS, Gustin SE, Harley VR, Koopman P, Sinclair AH (2012) Redd1 is a novel marker of testis development but is not required for normal male reproduction. *Sex Dev* 6:223-230.

O'Donnell L, Rhodes D, Smith SJ, Merriner DJ, Clark BJ, Borg C, Whittle B, O'Connor AE, Smith LB, McNally FJ, de Kretser DM, Goodnow CC, Ormandy CJ, Jamsai D, O'Bryan MK (2012) An essential role for p80 katanin and microtubule severing in male gamete production. *PLoS Genet* 8:e1002698.

O'Driscoll DM, Horne RSC, Davey MJ, Hope SA, Walker AM, Nixon GM (2012) Cardiac and sympathetic activation are reduced in children with Down syndrome and sleep disordered breathing. *Sleep* 35:1269-1275.

Oehme D, Goldschlager T, Rosenfeld J, Danks A, Ghosh P, Gibbon A, Jenkin G (2012) Lateral surgical approach to lumbar intervertebral discs in an ovine model. *ScientificWorldJournal* 2012:873726.

O'Mahony E, Stewart M, Sampson A, East C, Palma-Dias R (2012) Perinatal outcome of congenital diaphragmatic hernia in an Australian tertiary hospital. *Aust N Z J Obstet Gynaecol* 52:189-194.

Pan X, Yuan X, Zheng Y, Wang W, Shan J, Lin F, Jiang G, Yang Y, Liu JP, Xu D, Shen L (2012) Increased CD45RA+ FoxP3(low) regulatory T cells with impaired suppressive function in patients with systemic lupus erythematosus. *PLoS One* 7:e34662.

Pasco R, Gardner DK, Walker DW, Dickinson H (2012) A superovulation protocol for the spiny mouse (Acomys cahirinus). *Reprod Fertil Dev* 24:1117-1122.

Payne N, Sun G, Herszfeld D, Tat P, Verma PJ, Parkington H, Coleman H, Tona M, Siatskas C, Bernard C (2012) Comparative study on the therapeutic potential of neurally differentiated stem cells in a mouse model of multiple sclerosis. *PLoS One* 7:e35093.

PUBLICATIONS (CONTINUED)

Polglase GR, Hooper SB, Kluckow M, Gill AW, Harding R, Moss TJ (2012) The cardiopulmonary haemodynamic transition at birth is not different between male and female preterm lambs. *Reprod Fertil Dev* 24:510-516.

Polglase GR, Miller SL, Barton SK, Baburamani AA, Wong FY, Aridas JD, Gill AW, Moss TJ, Tolcos M, Kluckow M, Hooper SB (2012) Initiation of resuscitation with high tidal volumes causes cerebral hemodynamic disturbance, brain inflammation and injury in preterm lambs. *PLoS One* 7:e39535.

Polglase GR, Nitsos I, Baburamani AA, Crossley KJ, Slater MK, Gill AW, Allison BJ, Moss TJ, Pillow JJ, Hooper SB, Kluckow M (2012) Inflammation in utero exacerbates ventilation-induced brain injury in preterm lambs. *J Appl Physiol* 112:481-489.

Price TJ, Zannino D, Wilson K, Simes RJ, Cassidy J, Van Hazel GA, Robinson BA, Broad A, Ganju V, Ackland SP, Tebbutt NC (2012) Bevacizumab is equally effective and no more toxic in elderly patients with advanced colorectal cancer: a subgroup analysis from the AGITG MAX trial: an international randomised controlled trial of Capecitabine, Bevacizumab and Mitomycin C. *Ann Oncol* 23:1531-1536.

Ratnayake U, Quinn T, Castillo-Melendez M, Dickinson H, Walker DW (2012) Behaviour and hippocampus-specific changes in spiny mouse neonates after treatment of the mother with the viral-mimetic Poly I:C at mid-pregnancy. *Brain Behav Immun* 26:1288-1299.

Roure S, Bonis M, Chaput C, Ecobichon C, Mattox A, Barriere C, Geldmacher N, Guadagnini S, Schmitt C, Prevost MC, Labigne A, Backert S, Ferrero RL, Boneca IG (2012) Peptidoglycan maturation enzymes affect flagellar functionality in bacteria. *Mol Microbiol* 86:845-856.

Rudloff I, Bachmann M, Pfeilschifter J, Muhl H (2012) Mechanisms of rapid induction of interleukin-22 in activated T cells and its modulation by cyclosporin a. *J Biol Chem* 287:4531-4543.

Ruwanpura SM, McLeod L, Miller A, Jones J, Vlahos R, Ramm G, Longano A, Bardin PG, Bozinovski S, Anderson GP, Jenkins BJ (2012) Deregulated Stat3 signaling dissociates pulmonary inflammation from emphysema in gp130 mutant mice. *Am J Physiol Lung Cell Mol Physiol* 302:L627-639.

Saffery R, Morley R, Carlin JB, Joo JH, Ollikainen M, Novakovic B, Andronikos R, Li X, Loke YJ, Carson N, Wallace EM, Umstad MP, Permezel M, Galati JC, Craig JM (2012) Cohort profile: the peri/post-natal epigenetic twins study. *Int J Epidemiol* 41:55-61.

Sales PC, Williams BR, Silva AM (2012) Regulation of double-stranded RNA dependent protein kinase expression and attenuation of protein synthesis induced by bacterial toll-like receptors agonists in the absence of interferon. *J Interferon Cytokine Res* 32:495-504.

Schmolzer GM, Morley CJ, Wong C, Dawson JA, Kamlin CO, Donath SM, Hooper SB, Davis PG (2012) Respiratory function monitor guidance of mask ventilation in the delivery room: a feasibility study. *J Pediatr* 160:377-381 e2.

Schuessler A, Funk A, Lazear HM, Cooper DA, Torres S, Daffis S, Jha BK, Kumagai Y, Takeuchi O, Hertzog P, Silverman R, Akira S, Barton DJ, Diamond MS, Khromykh AA (2012) West Nile virus noncoding subgenomic RNA contributes to viral evasion of the type I interferon-mediated antiviral response. *J Virol* 86:5708-5718.

Sehgal A, Wong F, Mehta S (2012) Reduced cardiac output and its correlation with coronary blood flow and troponin in asphyxiated infants treated with therapeutic hypothermia. *Eur J Pediatr* 171:1511-1517.

Silas R, Sehgal A, Walker AM, Wong FY (2012) Cerebral oxygenation during subclinical seizures in neonatal hypoxic-ischaemic encephalopathy. *Eur J Paediatr Neurol* 16:304-307.

Sprung CN, Yang Y, Forrester HB, Li J, Zaitseva M, Cann L, Restall T, Anderson RL, Crosbie JC, Rogers PAW (2012) Genome-wide transcription responses to synchrotron microbeam radiotherapy. *Radiat Res* 178:249-259.

Stamp LA, Braxton DR, Wu J, Akopian V, Hasegawa K, Chandrasoma PT, Hawes SM, McLean C, Petrovic LM, Wang K, Pera MF (2012) The GCTM-5 epitope associated with the mucin-like glycoprotein FCGBP marks progenitor cells in tissues of endodermal origin. *Stem Cells* 30:1999-2009.

Stewart ZA, Wallace EM, Allan C (2012) Weight gain in pregnancy: a survey of current practices in a teaching hospital. *Aust N Z J Obstet Gynaecol* 52:208-210.

Stewart ZA, Wallace EM, Allan CA (2012) Patterns of weight gain in pregnant women with and without gestational diabetes mellitus: an observational study. *Aust N Z J Obstet Gynaecol* 52:433-439.

PUBLICATIONS (CONTINUED)

Strachan RE, Cornelius A, Gilbert GL, Gulliver T, Martin A, McDonald T, Nixon G, Roseby R, Ranganathan S, Selvadurai H, Smith G, Soto-Martinez M, Suresh S, Teoh L, Thapa K, Wainwright CE, Jaffe A (2012) Pleural fluid nucleic acid testing enhances pneumococcal surveillance in children. *Respirology* 17:114-119.

Stringer JM, Suzuki S, Pask AJ, Shaw G, Renfree MB (2012) GRB10 imprinting is eutherian mammal specific. *Mol Biol Evol* 29:3711-3719.

Stringer JM, Suzuki S, Pask AJ, Shaw G, Renfree MB (2012) Selected imprinting of INS in the marsupial. *Epigenetics Chromatin* 5:14.

Stringer JM, Suzuki S, Pask AJ, Shaw G, Renfree MB (2012) Promoter-specific expression and imprint status of marsupial IGF2. *PLoS One* 7:e41690.

Sutherland AE, Crossley KJ, Allison BJ, Jenkin G, Wallace EM, Miller SL (2012) The effects of intrauterine growth restriction and antenatal glucocorticoids on ovine fetal lung development. *Pediatr Res* 71:689-696.

Swanson AE, Veldman A, Wallace EM, Malhotra A (2012) Subgaleal hemorrhage: risk factors and outcomes. *Acta Obstet Gynecol Scan* 91:260-263.

Tare M, Miller SL, Wallace EM, Sutherland AE, Yawno T, Coleman HA, Jenkin G, Parkington HC (2012) Glucocorticoid treatment does not alter early cardiac adaptations to growth restriction in preterm sheep fetuses. *BJOG* 119:906-914.

Tate MD, Brooks AG, Reading PC, Mintern JD (2012) Neutrophils sustain effective CD8(+) T-cell responses in the respiratory tract following influenza infection. *Immunol Cell Biol* 90:197-205.

Thurgood J, Hooper SB, Siew ML, Wallace MJ, Dubsky S, Kitchen M, Jamison RA, Carnibella R, Fouras A (2012) Functional lung imaging during HFV in preterm rabbits. *PLoS One* 7:e48122.

Traister A, Aafaqi S, Masse S, Dai X, Li M, Hinek A, Nanthakumar K, Hannigan G, Coles JG (2012) ILK induces cardiomyogenesis in the human heart. *PLoS One* 7:e37802.

Tucker EJ, Mimaki M, Compton AG, McKenzie M, Ryan MT, Thorburn DR (2012) Next-generation sequencing in molecular diagnosis: NUBPL mutations highlight the challenges of variant detection and interpretation. *Hum Mutat* 33:411-418.

Tye H, Kennedy CL, Najdovska M, McLeod L, McCormack W, Hughes N, Dev A, Sievert W, Ooi CH, Ishikawa TO, Oshima H, Bhathal PS, Parker AE, Oshima M, Tan P, Jenkins BJ (2012) STAT3-driven upregulation of TLR2 promotes gastric tumorigenesis independent of tumor inflammation. *Cancer Cell* 22:466-478.

Ulrich D, Edwards SL, White JF, Supit T, Ramshaw JAM, Lo C, Rosamilia A, Werkmeister JA, Gargett CE (2012) A preclinical evaluation of alternative synthetic biomaterials for fascial defect repair using a rat abdominal hernia model. *PLoS One* 7:e50044.

van Vonderen JJ, Kleijn TA, Schilleman K, Walther FJ, Hooper SB, Te Pas AB (2012) Compressive force applied to a manikin's head during mask ventilation. *Arch Dis Child Fetal Neonatal Ed* 97:F254-258.

van Vonderen JJ, Siew ML, Hooper SB, de Boer MA, Walther FJ, Te Pas AB (2012) Effects of naloxone on the breathing pattern of a newborn exposed to maternal opiates. *Acta Paediatr* 101:e309-312.

Varon C, Dubus P, Mazurier F, Asencio C, Chambonnier L, Ferrand J, Giese A, Senant-Dugot N, Carlotti M, Megraud F (2012) Helicobacter pylori infection recruits bone marrow-derived cells that participate in gastric preneoplasia in mice. *Gastroenterology* 142:281-291.

Ve T, Gay NJ, Mansell A, Kobe B, Kellie S (2012) Adaptors in toll-like receptor signaling and their potential as therapeutic targets. *Curr Drug Targets* 13:1360-1374.

Verghese E, Johnson C, Bertram JF, Ricardo SD, Deane JA (2012) The fate of bone marrow-derived cells carrying a polycystic kidney disease mutation in the genetically normal kidney. *BMC Nephrol* 13:91.

Verma R, Holland MK, Temple-Smith P, Verma PJ (2012) Inducing pluripotency in somatic cells from the snow leopard (Panthera uncia), an endangered felid. *Theriogenology* 77:220-228 e2.

Vlassaks E, Gavilanes AWD, Bieghs V, Reinartz A, Gassler N, Van Gorp PJ, Gijbels MJJ, Bekers O, Zimmermann LJI, Pillow JJ, Polglase GR, Nitsos I, Newnham JP, Kallapur SG, Jobe AH, Shiri-Sverdlov R, Kramer BW (2012) Antenatal exposure to chorioamnionitis affects lipid metabolism in 7-week-old sheep. *J Dev Orig Health Dis* 3:103-110.

PUBLICATIONS (CONTINUED)

Walter LM, Nixon GM, Davey MJ, Anderson V, Trinder J, Walker A, Horne RS (2012) Differential effects of sleep disordered breathing on polysomnographic characteristics in preschool and school aged children. *Sleep Med* 13:810-815.

Weickhardt AJ, Price TJ, Chong G, Gebski V, Pavlakis N, Johns TG, Azad A, Skrinos E, Fluck K, Dobrovic A, Salemi R, Scott AM, Mariadason JM, Tebbutt NC (2012) Dual targeting of the epidermal growth factor receptor using the combination of Cetuximab and Erlotinib: preclinical evaluation and results of the phase II DUX study in chemotherapy-refractory, advanced colorectal cancer. *J Clin Oncol* 30:1505-1512.

Weiss G, Maateoft-Udsen K, Stifter SA, Hertzog P, Goriely S, Thomsen AR, Paludan SR, Frøkiær H (2012) MyD88 drives the IFN-β response to Lactobacillus acidophilus in dendritic cells through a mechanism involving IRF1, IRF3 and IRF7. *J Immunol* 189:2860-2868.

Westover AJ, Hooper SB, Wallace MJ, Moss TJ (2012) Prostaglandins mediate the fetal pulmonary response to intrauterine inflammation. *Am J Physiol Lung Cell Mol Physiol* 302:L664-678.

Westover AJ, Moss TJ (2012) Effects of intrauterine infection or inflammation on fetal lung development. *Clin Exp Pharmacol Physiol* 39:824-830.

Wheeler KI, Morley CJ, Hooper SB, Davis PG (2012) Lower back-up rates improve ventilator triggering during assist-control ventilation: a randomized crossover trial. *J Perinatol* 32:111-116.

White S, Hewitt J, Turbitt E, van der Zwan Y, Hersmus R, Drop S, Koopman P, Harley V, Cools M, Looijenga L, Sinclair A (2012) A multi-exon deletion within WWOX is associated with a 46,XY disorder of sex development. *Eur J Hum Genet* 20:348-351.

Wilkins S, Zhang KW, Mahfuz I, Quantin R, D'Cruz N, Hutson J, Ee M, Bagli D, Aitken K, Fong FN, Ng PK, Tsui SK, Fung WY, Banu T, Thakre A, Johar K, Jaureguizar E, Li L, Cheng W (2012) Insertion/deletion polymorphisms in the deltaNp63 promoter are a risk factor for bladder exstrophy epispadias complex. *PLoS Genet* 8:e1003070.

Witcombe NB, Yiallourou SR, Sands SA, Walker AM, Horne RS (2012) Preterm birth alters the maturation of baroreflex sensitivity in sleeping infants. *Pediatrics* 129:e89-96.

Wong FY, Silas R, Hew S, Samarasinghe T, Walker AM (2012) Cerebral oxygenation is highly sensitive to blood pressure variability in sick preterm infants. *PLoS One* 7:e43165.

Wu D, Smyth GK (2012) Camera: a competitive gene set test accounting for inter-gene correlation. *Nucleic Acids Res* 40:e133.

Wu D, Wang D (2012) Application of advanced gene set tests in breast cancer research. *Chinese J Bioinforma* 2012:92-95.

Wu H, Chen Y, Winnall WR, Phillips DJ, Hedger MP (2012) Acute regulation of activin A and its binding protein, follistatin, in serum and tissues following lipopolysaccharide treatment of adult male mice. *Am J Physiol Regul Integr Comp Physiol* 303:R665-675.

Wu SM, Tan KS, Chen H, Beh TT, Yeo HC, Ng SK, Wei S, Lee DY, Choo AB, Chan KK (2012) Enhanced production of neuroprogenitors, dopaminergic neurons, and identification of target genes by overexpression of sonic hedgehog in human embryonic stem cells. *Stem Cells Dev* 21:729-741.

Yang JS, Nicholas CL, Nixon GM, Davey MJ, Anderson V, Walker AM, Trinder J, Horne RS (2012) EEG spectral analysis of apnoeic events confirms visual scoring in childhood sleep disordered breathing. *Sleep Breath* 16:491-497.

Ye L, Evans J, Gargett CE (2012) Lim1/LIM1 is expressed in developing and adult mouse and human endometrium. *Histochem Cell Biol* 137:527-536.

Yiallourou SR, Sands SA, Walker AM, Horne RS (2012) Maturation of heart rate and blood pressure variability during sleep in term-born infants. *Sleep* 35:177-186.

Young JM, Henderson S, Souza CJ, Ludlow H, Groome N, McNeilly A (2012) Activin B is produced early in antral follicular development and suppresses thecal androgen production. *Reproduction* 143:637-650.

Young JM, McNeilly AS (2012) Inhibin removes the inhibitory effects of activin on steroid enzyme expression and androgen production by normal ovarian thecal cells. *J Mol Endocrinol* 48:49-60.

PUBLICATIONS (CONTINUED)

Zheng Y, Wang Z, Deng L, Yuan X, Ma Y, Zhang G, Gantier MP, Liu JP, Shen L, Xu D (2012) Osteopontin promotes inflammation in patients with acute coronary syndrome through its activity on IL-17 producing cells. *Eur J Immunol* 42:2803-2814.

REVIEW ARTICLES

Azhan A, Wong FY (2012) Challenges in understanding the impact of blood pressure management on cerebral oxygenation in the preterm brain. *Front Physiol* 3:471

Barakat B, Itman C, Mendis S, Loveland KL (2012) Activins and inhibins in mammalian testis development: new models, new insights. *Mol Cell Endocrinol* 359:66-77.

Berry CM, Hertzog PJ, Mangan NE (2012) Interferons as biomarkers and effectors: lessons learned from animal models. *Biomark Med* 6:159-176.

Cantsilieris S, Baird PN, White SJ (2012) Molecular methods for genotyping complex copy number polymorphisms. *Genomics* 101:86-93.

de Kretser DM, O'Hehir RE, Hardy CL, Hedger MP (2012) The roles of activin A and its binding protein, follistatin, in inflammation and tissue repair. *Mol Cell Endocrinol* 359:101-106.

de Weerd NA, Nguyen T (2012) The interferons and their receptors–distribution and regulation. *Immunol Cell Biol* 90:483-491.

Forster S (2012) Interferon signatures in immune disorders and disease. *Immunol Cell Biol* 90:520-527.

Frydenberg M (2012) What's new in prostate cancer testing. *Medicine Today* 13:73-76.

Gargett C, Ye L (2012) Endometrial reconstruction from stem cells. *Fertil Steril* 98:11-20.

Gargett CE, Nguyen HP, Ye L (2012) Endometrial regeneration and endometrial stem/progenitor cells. *Rev Endocr Metab Disord* 13:235-251.

Gough DJ, Messina NL, Clarke CJ, Johnstone RW, Levy DE (2012) Constitutive type I interferon modulates homeostatic balance through tonic signaling. *Immunity* 36:166-174.

Hedger MP, Winnall WR (2012) Regulation of activin and inhibin in the adult testis and the evidence for functional roles in spermatogenesis and immunoregulation. *Mol Cell Endocrinol* 359:30-42.

Hertzog PJ (2012) Overview. Type I interferons as primers, activators and inhibitors of innate and adaptive immune responses. *Immunol Cell Biol* 90:471-473.

Hodges RJ, Lim R, Jenkin G, Wallace EM (2012) Amnion epithelial cells as a candidate therapy for acute and chronic lung injury. *Stem Cells Int* 2012:709763.

Hodges RJ, Wallace EM (2012) Mending a growth-restricted fetal heart: should we use glucocorticoids? *J Matern Fetal Neonatal Med* 25:2149-2153.

Ivashkevich A, Redon CE, Nakamura AJ, Martin RF, Martin OA (2012) Use of the gamma-H2AX assay to monitor DNA damage and repair in translational cancer research. *Cancer Lett* 327:123-133.

Keenan CR, Salem S, Fietz ER, Gualano RC, Stewart AG (2012) Glucocorticoid-resistant asthma and novel anti-inflammatory drugs. *Drug Discov Today* 17:1031-1038.

Kelleher FC, Cain JE, Healy JM, Watkins DN, Thomas DM (2012) Prevailing importance of the hedgehog signaling pathway and the potential for treatment advancement in sarcoma. *Pharmacol Ther* 136:153-168.

PUBLICATIONS (CONTINUED)

Londrigan SL, Tate MD, Brooks AG, Reading PC (2012) Cell-surface receptors on macrophages and dendritic cells for attachment and entry of influenza virus. *J Leukoc Biol* 92:97-106.

Malaver-Ortega LF, Sumer H, Liu J, Verma PJ (2012) The state of the art for pluripotent stem cells derivation in domestic ungulates. *Theriogenology* 78:1749-1762.

Mangan NE, Fung KY (2012) Type I interferons in regulation of mucosal immunity. *Immunol Cell Biol* 90:510-519.

Miles DC, Western PS (2012) Germ cell sex and cell cycle. *Histol Histopathol* 27:445-457.

Mimaki M, Wang X, McKenzie M, Thorburn DR, Ryan MT (2012) Understanding mitochondrial complex I assembly in health and disease. *BBA-Bioenergetics* 1817:851-862.

Ng W, Tate MD, Brooks AG, Reading PC (2012) Soluble host defense lectins in innate immunity to influenza virus. *J Biomed Biotechnol* 2012:732191.

Sarvestani S, Gantier MP, Williams BRG (2012) Human toll-like receptor 8 can be cool too: implications for foreign RNA sensing. *J Interferon Cytokine Res* 32:350-361.

St John JC (2012) Transmission, inheritance and replication of mitochondrial DNA in mammals: implications for reproductive processes and infertility. *Cell Tissue Res* 349:795-808.

Suliman BA, Xu D, Williams BR (2012) HDACi: molecular mechanisms and therapeutic implications in the innate immune system. *Immunol Cell Biol* 90:23-32.

Suliman BA, Xu D, Williams BRG (2012) The promyelocytic leukemia zinc finger protein: two decades of molecular oncology. *Front Oncol* 2:74.

Vosdoganes P, Lim R, Moss TJ, Wallace EM (2012) Cell therapy: a novel treatment approach for bronchopulmonary dysplasia. *Pediatrics* 130:727-737.

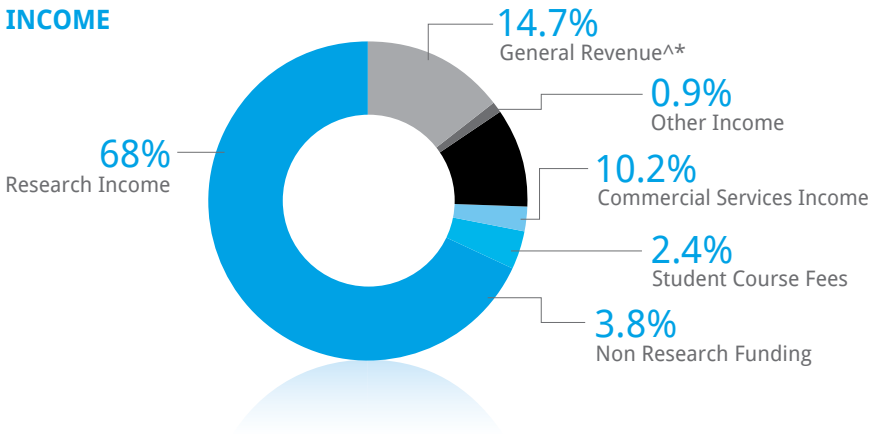
FINANCIAL REPORT

Cash Flow Statement

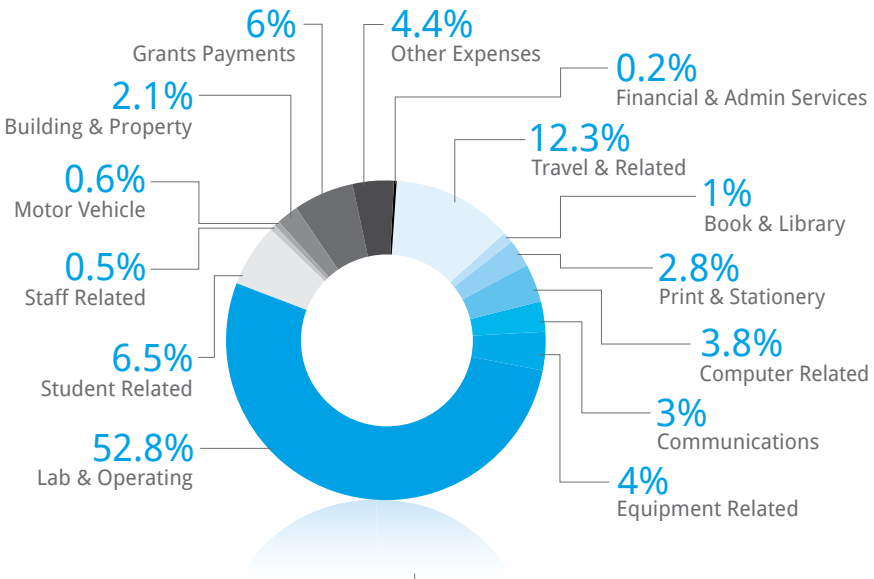
CASH FLOW STATEMENT

YEAR TO DATE 31 DECEMBER 2012

INCOME



NON SALARY EXPENSES



	2012
INCOME	
General Revenue^*	3,702,980
Other Income	217,826
Commercial Services Income	2,567,472
Student Course Fees	604,320
Non Research Funding	955,994
Research Income	17,147,252
	25,195,844
SALARIES EXPENDITURE	
All Salary Expenses	16,532,177
	16,532,177
NON SALARY EXPENSES	
Other Expenses	275,388
Financial & Admin Services	10,219
Travel & Related	764,305
Book & Library	60,827
Print & Stationery	172,153
Computer Related	234,153
Communications	191,049
Equipment Related	250,858
Lab & Operating	3,283,968
Student Related	404,438
Staff Related	36,012
Motor Vehicle	37,557
Building & Property	130,757
Grants Payments	373,186
	6,224,870
CAPITAL EXPENDITURE	1,961,282
TOTAL EXPENDITURE	**24,718,329**
OPERATING SURPLUS/DEFICIT	477,515

^ *Includes State Government Operational Infrastructure Support Funding*

* *Includes Net Infrastructure from University*

27-31 Wright Street
Clayton Victoria 3168
Australia

t: +61 3 9594 7100
f: +61 3 9594 7114

www.monashinstitute.org

MONASH INSTITUTE OF MEDICAL RESEARCH

MONASH University

Design: Dynamic Creations