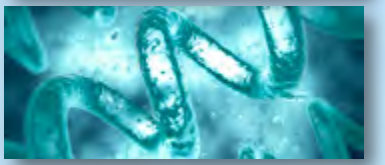
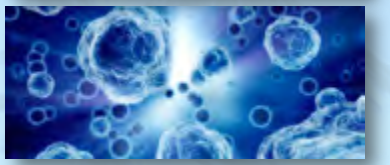
Monash Institute of Medical Research 2010 Annual Report

I About MIMR

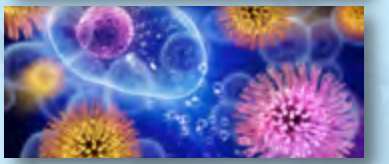


II Director's Message

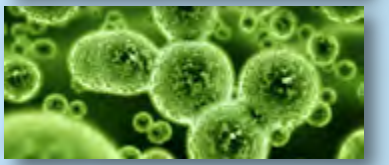
III Chairman's Message



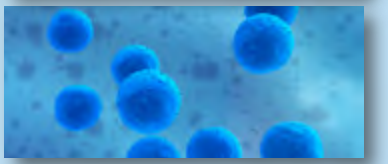
IV Governance



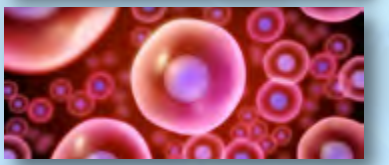
V Research



VI Education



VII Supporting our Research



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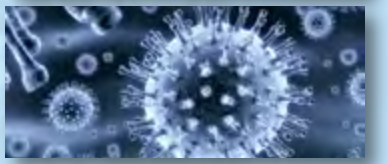
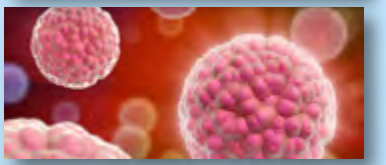


IX Financial Report



About MIMR

Vision

History

Organisational Structure

Vision

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

History

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

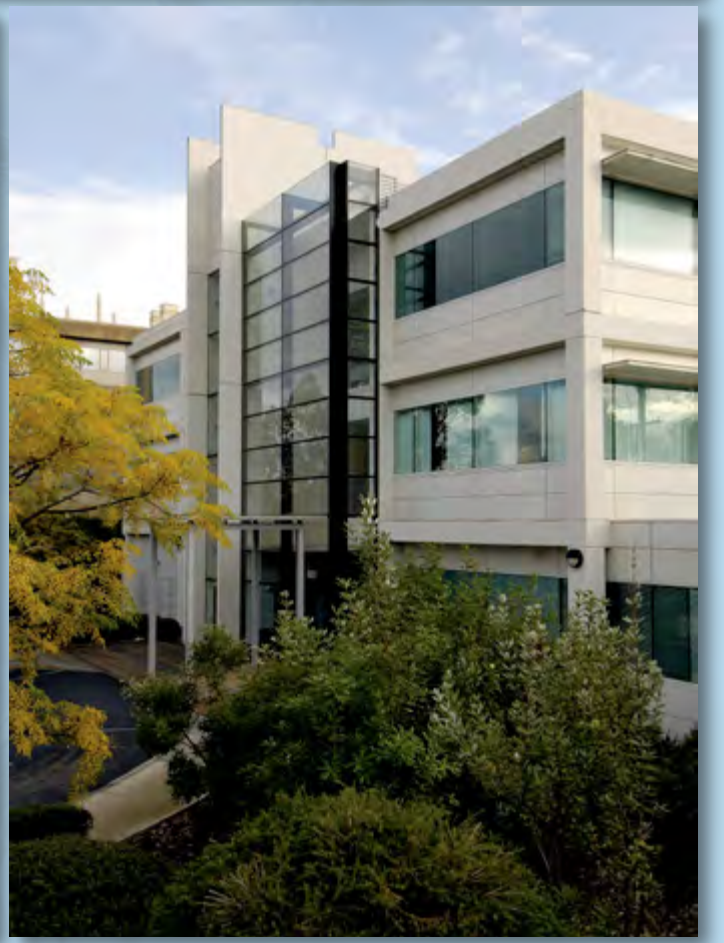
The Institute originally brought together scientists and clinicians undertaking research into conception, birth and development at the Centre for Early Human Development, Monash Medical Centre, with scientists working in the field of male reproductive health within the Department of Anatomy, Monash University.

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

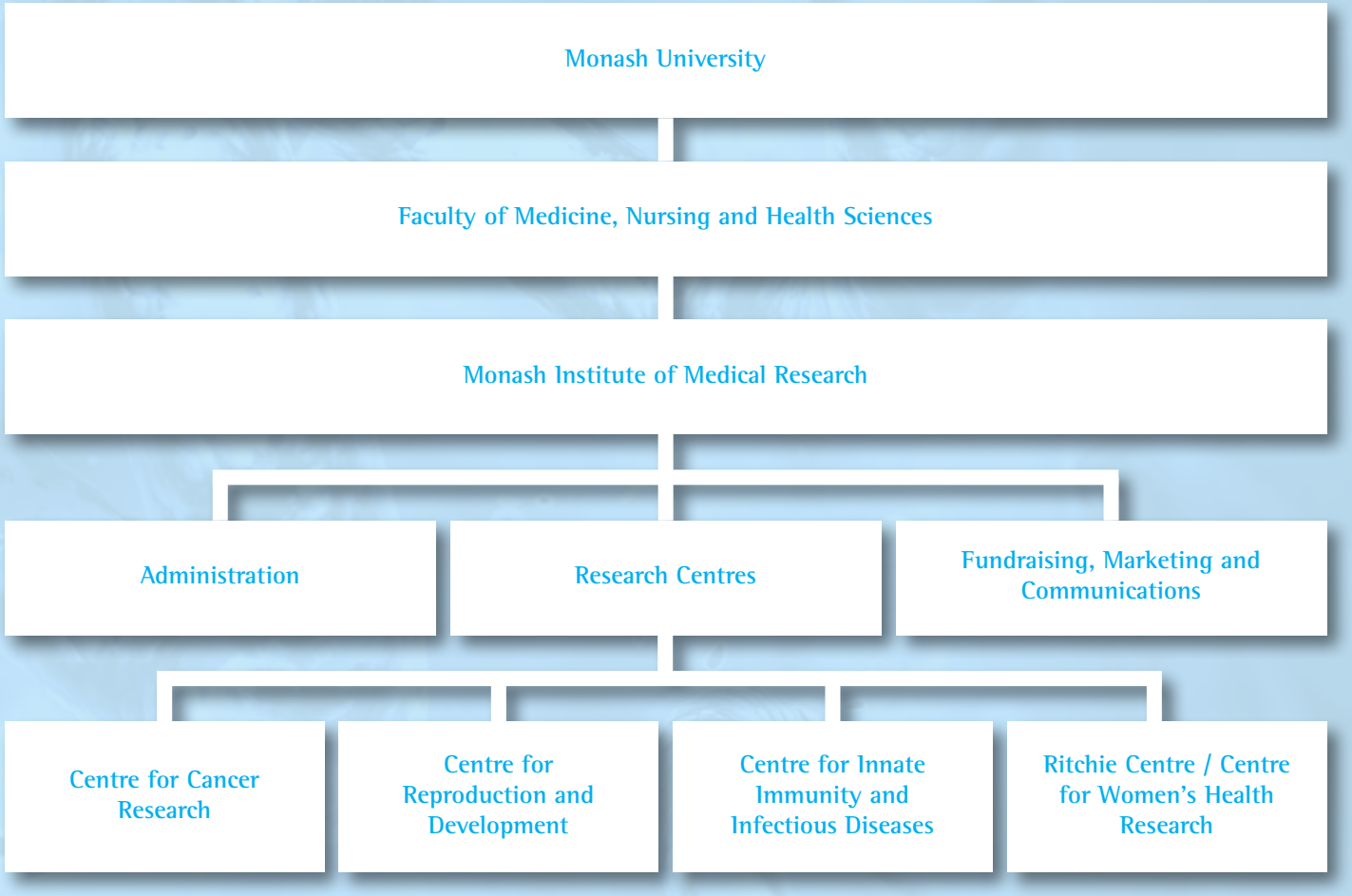
Recognising that its research had evolved beyond reproduction and development, the Institute became the Monash Institute of Medical Research in 2005.

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 preterm infant health, cancer, inflammation, infectious diseases, women's and men's health and stem cells.



Organisational Structure



II Director's Message

Director's Message

Director's Message

It was another busy and rewarding year for all at MIMR in terms of significant research findings and attracting competitive grants.

Our excellent track record in competitive research funding continued in 2010. We achieved a 34 percent success rate with our National Health and Medical Research Council project grant funding and a 50 percent success rate with our Australian Research Council funding applications. This was well above the national averages of 23.4 percent and 22.7 percent, respectively. This outstanding result is a true reflection of the quality of the basic research taking place in our Institute.

Another major success this year was the $1.6 million that the Monash Health Translation Precinct (MHTP) received from the Australian Cancer Research Foundation (ACRF). This successful application was led by MIMR. The funding will change the way we conduct translational cancer research throughout the Precinct. The generous support of the ACRF will allow us to establish the ACRF Centre for Cancer Genomic Medicine; a translational facility that will eventually lead to individualised cancer treatment for each patient.

The State Government and Victorian Cancer Agency also showed their support for our cancer research programs. In October, the then-Health Minister, the Honourable Daniel Andrews, visited MIMR to launch the Monash Comprehensive Cancer Consortium, and to announce funding for a $3 million state-wide lung cancer research program, to be led by MIMR researcher, Professor Neil Watkins. Neil also received a further $500,000 for his own lung cancer research projects. Clinical Research Fellowships were also announced, with two going to MIMR clinician/researchers, Dr Ben Markman and Dr Elizabeth Sigston.

As always, we are grateful to the Federal and State Governments, and our many philanthropic donors for their ongoing support of our research programs.

It was a year of review and change for our Advisory Board. We welcomed new Chairman, Mr Graham Wise, as well as new members, Professors Ross Coppel, Ian Smith and Paul Hertzog, and Ms Sue Williamson. Our outgoing Chairman, Mr George Pappas, has taken up the appointment of Chancellor of Victoria University. For the last seven years, George has been a key voice for medical research, and MIMR in particular. We wish him all the best in his new role.

I was pleased to host an MIMR Patrons Club event in July. The event showcased some of the exceptional research currently underway at the Institute. The focus of the evening was Neil Watkins' lung cancer research program, in particular, the potential new therapeutics his work is uncovering and the role cancer stem cells may play in future lung cancer treatments. We are grateful to all our Patrons Club members for their ongoing interest and support of the Institute.

Our annual Ron Evans Golf Day was a resounding success in raising funds for our bowel cancer research programs. Despite playing 18 holes in very hot conditions, the 130 players enjoyed their day's golfing at the Royal Melbourne Golf Club, followed by dinner and a silent auction. The funds raised from the day will go a long way towards furthering our bowel cancer research, in honour of Ron Evans AM, who

passed away from bowel cancer in 2007. My thanks go to the Evans Family for their ongoing support of this special event, and in particular, Mrs Andrea Evans for her generous $50,000 donation.

Throughout 2010, collaborations within the MHTP continued to prosper. Resources and expertise were pooled for key research partnerships and funding applications. In addition to the ACRF funding, upgrades to facilities within the Precinct, carried out in 2010, will expand the reach of services to a wider internal and external client base. The MHTP website was launched during the year, and has become an excellent communication tool through which to promote the Precinct partners' vision to be a world leader in translating scientific discovery into world's best healthcare.

The changing political climate in Victoria this year led to a delay in confirming the State Government's support for the new MHTP translational research facility. We are lobbying the new Government to augment the Federal Government's $71 million commitment to establish this facility that will further integrate medical research with clinical outcomes. We are optimistic that this will be resolved in 2011, and we can begin to make our vision a reality.

It was a year of evolution for the Ritchie Centre. For nearly twenty years, the Centre has made immeasurable contributions to the field of newborn health and is internationally recognised as a leading research centre in baby health. Newly appointed Centre Director, Professor Euan Wallace, has overseen the expansion of the Ritchie Centre, which included three key laboratories from Monash University's Physiology Department joining MIMR. The Centre now also encompasses fetal and perinatal medicine, women's health, maternal health and stem cell biology. As a result of these changes, the Ritchie Centre is now the largest perinatal and neonatal research facility in the Southern Hemisphere.

While some researchers from the Centre for Women's Health Research moved across to the Ritchie Centre, we said goodbye to Professor Peter Rogers and his team. Peter has been part of MIMR for the last ten years, during which time he was the Director of the Centre for Women's Health Research. This group has moved to the Royal Women's Hospital, and we wish them all the very best for the future.

The current financial climate within the tertiary education sector has made 2010 a challenging year for the Institute. But it is a credit to our researchers, staff and students that we have continued to work hard and produce research of the highest calibre. While these challenges will carry into 2011, I have no doubt that we will continue to increase our research output, strengthen our collaborations and make further advances in understanding and treating diseases that affect men, women and children around the globe.

Professor Bryan Williams

Institute Director

Chairman's Message

Chairman's Message

Chairman's Message

It is a privilege to present my first report as Chairman of the Monash Institute of Medical Research Advisory Board.

A hallmark of a successful organisation is its ability to deal with change, and 2010 has been a year of change for all facets of the MIMR community. In my first year as Chairman, it was obvious to me that the Directors, researchers, students and staff of MIMR are ideally equipped to deal with the challenging financial climate that currently pervades medical research in Australia. Tough decisions have had to be made, but it is a credit to the Institute that our research has continued to make a real impact on the quality of human life.

Change has also swept through the makeup of the MIMR Advisory Board. My deepest respects go to outgoing Chairman, Mr George Pappas for the seven years he has passionately advocated on behalf of MIMR. We wish him all the best in his new role as Chancellor of Victoria University. George's resignation marked a transitory point for the Advisory Board. We welcome new members, Professors Ross Coppel, Paul Hertzog and Adrian Walker, and Ms Sue Williamson. Joining forces with long-standing MIMR Board Members, Ms Barbara Crook, Mr Robert Smorgon and Professor Steve Wesselingh, we will use our combined energies to re-establish MIMR's profile, voice and identity at a local, national and international level. Thank you to all outgoing Board Members for the time and commitment you have dedicated to MIMR.

The Advisory Board will be involved in developing a new Strategic Plan for the Institute to ensure key research and philanthropic objectives are met. This will follow on from the International Review Panel and the Strategic Retreat held over the last couple of years. As part of the Strategic Plan, a Research Advisory Committee will also be established. This will comprise local and international members and will meet on an annual basis to advise the Director on the Institute's research portfolio.

As 2010 draws to a close, we are working with Bryan to examine the different funding models that apply to MIMR and how we can address these models with a fresh approach to address the challenges of maintaining and expanding the Institute's research base.

The Director's Report covers the Institute's work over the past year, and does not require re-iterating. However, I must take this opportunity to congratulate all researchers in achieving an outstanding success rate in their applications to the main funding bodies in Australia, the National Health and Medical Council and the Australian Research Council. Our success rate of 34% and 50% respectively was well above the national average and reflects the breadth and depth of research underway at MIMR.

On behalf of all Board Members, thank you to Bryan, the Centre Directors, researchers, students and staff. To be successful in your research career, you require endless amounts of dedication, patience and enthusiasm. Your tireless work certainly does not go unnoticed. Thank you for all that you do.

Graeme Wise

Chairman, Monash Institute of Medical Research Advisory Board

IV 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 Inflammatory Diseases, Monash Institute of Medical Research

Professor Ian Smith

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

Board Member, Monash Centre for Synchrotron Science

Board member, Auspep Pty Ltd

Director, Victorian Node, Proteomics Australia Consortium

Mr Robert Smorgon AM

Director, Escor Group

Director, Australian Council for Children and Youth Organisations

Adjunct Professor Adrian Walker

Trustee, MIMR Foundation

Professor Steve Wesselingh

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

Professor Bryan Williams

Director, Monash Institute of Medical Research

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

Director and Chairman, Marshall Edwards Inc

Australian Director, Pacific Edge Biotechnology Limited

Ms Sue Williamson

Tax Partner, Clayton Utz

Senior Fellow, University of Melbourne

V Research

Centre for Cancer Research

Centre for Innate Immunity and Infectious Diseases

Centre for Reproduction and Development

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

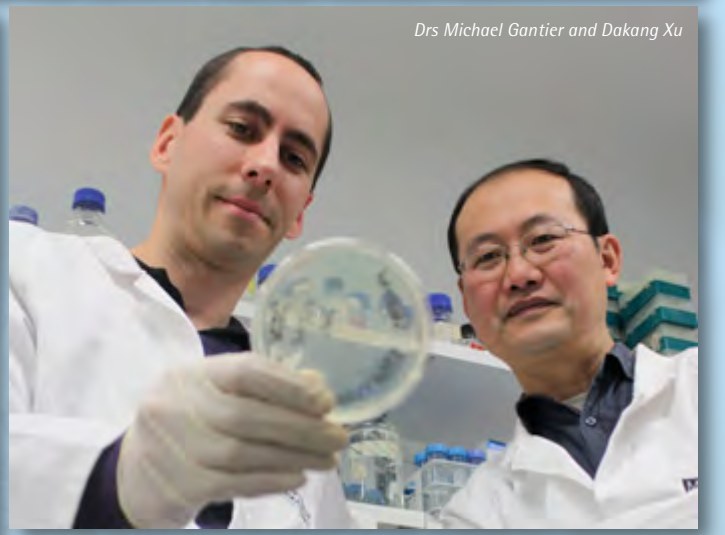
Scientists in the Centre for Cancer Research conduct basic research into the molecular and cell signalling pathways underlying the development, growth and metastasis of tumours, and the links with innate immunity and inflammatory processes. In addition, translational research into the development of novel anti-cancer therapeutics is carried out in the Centre, which also houses the growing Phase I Clinical Trials Program.

In 2010, the State Government and the Victorian Cancer Agency (VCA) awarded $3 million for the Victorian Lung Cancer Initiative, a state-wide program for lung cancer research to be led by Professor Neil Watkins from the Centre for Cancer Research. Professor Watkins also received a VCA Tumour Stream Grant of $500,000 to investigate innate chemoresistance in lung cancer, and is a member of a team led by Associate Professor David Thomas at Peter Mac that received $2.8 million for a translational research program in sarcoma.

The VCA also awarded Clinical Research Fellowships to two members of the Centre for Cancer Research; Drs Ben Markman and Elizabeth Sigston. Dr Markman, a medical oncologist in the Phase I Clinical Trials Program, was awarded a Fellowship for his research into the role of the Notch signalling pathway in lung cancer. Dr Sigston, a consultant surgeon with Southern Health and a PhD student with Professor Bryan Williams, received a Fellowship for her work on laminin 2 as a prognostic marker for the detection of head and neck cancers. In addition, Dr Jacqui Donoghue was awarded an Early Career Seed Grant by the VCA for research into the role of the protein ErbB4 in glioblastoma multiforme, and the development of novel therapies.

Professor Bryan Williams and several members of his research group presented their results at the 8th Joint Conference of the International Cytokine Society and the International Society for Interferon and Cytokine Research in October, in Chicago, USA. At the meeting, Dr Michael Gantier was presented with a Seymour and Vivian Milstein Young Investigator Award for his contributions to the fields of innate immunity and interferon research. Dr Elizabeth Williams was invited to present her work on tumour cell plasticity at two international meetings in Japan in 2010. She spoke at the 19th Annual Meeting of the Japanese Association for Metastasis Research, held in Kanazawa, and also at the 69th Annual Meeting of the Japanese Cancer Association, in Osaka.

In 2010, Dr Dakang Xu was awarded a Long-Jiang Scholar Professorship by the State Council of the Chinese Government. The scholarship funding has enabled him to develop collaborative projects in China with the School of Bioinformatics and the Department of



Drs Michael Gantier and Dakang Xu

Microbiology at Harbin Medical University. PhD student Alex Wilding received a Pfizer Oncology Research Unit Scholarship in 2010. He spent 3 months working at Pfizer in La Jolla, California, conducting research into cancer metabolism in hepatocellular carcinoma.

Associate Professor Terry Johns was a co-inventor on an important new provisional patent application in 2010, which has generated much interest. The patent protects several novel antibodies directed against c-Met, a major receptor tyrosine kinase target in cancer.

Three clinical trials were under way in the Phase I Clinical Trials Program in 2010, investigating new drugs for use in the treatment of glioblastoma, small cell lung cancer, and solid cancers that have spread to the liver.

Research Highlights

Aberrant epithelial-mesenchymal Hedgehog signaling characterizes Barrett's metaplasia

Barrett's oesophagus is a common, premalignant disorder in which gastro-oesophageal reflux results in a metaplastic conversion of the lower oesophageal epithelium to a primitive intestinal phenotype. The molecular mechanism underlying epithelial metaplasia in Barrett's oesophagus is unknown. Since Hedgehog signalling is required for intestinal epithelial specification, Professor Watkins' team sought to determine if the Hedgehog pathway is reactivated in Barrett's oesophagus, and if genes downstream of the pathway could promote columnar differentiation of oesophageal epithelium.

The team showed that marked up-regulation of Hedgehog ligand expression occurs frequently in Barrett's epithelium, and is associated with stromal expression of the Hedgehog target genes PTCH1 and BMP4. BMP4 signalling induces expression of SOX9, an intestinal stem cell transcription factor, which is highly expressed in Barrett's epithelium. Transgenic expression of Sonic Hedgehog in mouse oesophageal epithelial cells induces expression of stromal Bmp4 and epithelial Sox9, and results in the expression of columnar epithelial markers.

These data suggest that aberrant activation of Hedgehog signalling is sufficient to trigger reprogramming of oesophageal epithelium in favour of a columnar phenotype, thus implicating this pathway in the initiation of Barrett's metaplasia.

Wang DH, Clemons NJ, Miyashita T, Dupuy AJ, Zhang W, Szczepny A, Corcoran-Schwartz IM, Wilburn DL, Montgomery EA, Wang JS, Jenkins NA, Copeland NA, Harmon JW, Phillips WA, Watkins DN (2010) Aberrant epithelial-mesenchymal Hedgehog signaling characterizes Barrett's metaplasia. *Gastroenterology 138:1810-1822.*

Rational design of immunostimulatory siRNAs

A key factor in tumour progression is the inability of the immune system to recognise the cancer cells and promote their clearance. In fact, the tumour environment tricks the immune system into favouring its development.

Professor Williams, Dr Gantier and their team characterised a novel modification amenable to a new class of drugs, called "small interfering RNAs" (siRNAs), which activates the immune system. siRNAs allow for the specific blocking of genes that turn the cells into tumours. Activation of the immune system, which restores recognition of mutant cells, is known to have strong anti-tumoural effects for several cancers. The team proposed that combined recruitment of the immune system in the tumour environment together with blocking specific genes would have strong anti-tumoural effects.

The concept of a single drug that can hit tumours several ways has many advantages for therapeutic use in humans, in areas such as drug delivery and side-effects. Recent evidence has validated the synergistic anti-tumoural potential of siRNAs blocking specific genes and recruiting the immune system. The team is currently characterising additional modifications that will help to further boost activation of the immune system by siRNAs, and promote longer-lasting, anti-tumoural effects.

Gantier MP, Tong S, Behlke MA, Irving AT, Lappas M, Nilsson UW, Latz E, McMillan NAJ, Williams BRG (2010) Rational design of immunostimulatory siRNAs. *Mol Ther 18:785-795.*

Grants Awarded in 2010

National Health and Medical Research Council (NHMRC)

T Johns
NHMRC Project Grant: *Biology of EGFR mutations in glioblastoma multiforme* (2011-13)
$277,524

S Tong, T Johns, E Wallace
NHMRC Project Grant: *Combination methotrexate and gefitinib to cure ectopic pregnancies: phase I-II clinical trials* (2011-2013)
$228,770

BRG Williams, MC Wilce, JA Wilce
NHMRC Project Grant: *Protein recognition of small RNAs in innate immunity* (2011-13)
$643,416

BRG Williams, D Xu
NHMRC Project Grant: *Regulation of innate immunity and tumour progression by activating transcription factor 3* (2011-13)
$457,128

B Williams, P Hertzog, B Jenkins, C Mackay, F Mackay, G Risbridger, E Wallace, DN Watkins
NHMRC Equipment Grant: *Covaris E-Series/Agilent Bioanalyzer 2100* (2011)
$168,902

Australian Research Council (ARC)

BRG Williams
ARC Discovery Grant: *Structural and functional analysis of the protein kinase R* (2011-13)
$270,000

C Porter, B Boyd, L Kaminskas, D Owen, E Williams
ARC Linkage Grant: *Designing dendrimer-based lymphatic drug vectors as improved treatments for metastatic cancer* (2010-13)
$410,000

Victorian Cancer Agency (VCA)

D Thomas, M Smyth, DN Watkins, J Desai, R Simpson, W Matsui
VCA Translational Program Grant: *Translational Program in Sarcoma* (2010-13)
$2,800,000

DN Watkins
VCA Program Grant: *Victorian Lung Cancer Initiative* (2011-13)
$3,000,000

DN Watkins
VCA Tumour Stream Grant: *Innate chemoresistance in lung cancer* (2011-13)
$500,000

B Markman
VCA Clinical Research Fellowship: *The role of the notch pathway ligand DLL4 in lung cancer* (2011-12)
$400,000

E Sigston
VCA Clinical Research Fellowship: *The role of laminin y2 in oral tongue squamous cell carcinoma as a prognostic marker* (2011-12)
$356,142

Jacqueline Donoghue
VCA Early Career Seed Grant: *ErbB4: a new therapeutic target in glioblastoma multiforme* (2010)
$93,000

Contract Grants

N Gattardo, T Johns
Preclinical study of the effects of PF-00299804 on the growth and survival of malignant brain tumor cells (2011)
Pfizer, $60,000

T Johns
The anti-tumor activity of AMG 706 in glioma cell lines and xenografts alone or in combination with panitumumab and AMG 102 (2011)
Amgen Inc, $50,000

E Williams
Effect of AR28 on metastasis as a single agent and in combination with a bisphosphonate (2010)
AstraZeneca United Kingdom Ltd Europe Agreement, $100,000

Philanthropic Grants

W Cheng
Genetic study of babies born with severe bladder defects (2011)
Helen Macpherson Smith Trust, $25,000

W Cheng, S Wilkins, S Zhang
Genetic study of babies born with severe bladder defects (2011)
Jack Brockhoff Foundation Project Grant $40,000

S Wilkins
Can elemental bio-imaging of trace elements be used as a prognosis marker for prostate cancer? (2011)
Marian & EH Flack Trust, $30,336

Scholarships, awards, promotions

Simone Beckham
Monash University Faculty of Medicine, Nursing and Health Sciences Travel Grant

Sanja Coso
- Prostate Cancer Foundation Australia Travel Grant
- Best Poster, Australian Vascular Biology Society, 18th Annual Scientific Meeting
- Finalist, Best of the Best Poster Award, Australian Health and Medical Research Congress 2010

Dr Michael Gantier
Seymour and Vivian Milstein Young Investigator Award, International Society for Interferon and Cytokine Research

Dr Aaron Irving
Milstein Travel Award, International Society for Interferon and Cytokine Research

Dr Tony Sadler
Milstein Travel Award, International Society for Interferon and Cytokine Research

Dhanya Sreedharan
Highly Commended, Southern Health Research Week Poster Award, Cancer Research

Matthew Thompson
2010 MIMR Postgraduate Symposium - Team Player

Professor Neil Watkins
Monash Medical Student Outstanding Supervisor Award

Alexander Wilding
- Pfizer Oncology Research Unit Scholarship (PORUS)
- 2010 MIMR Postgraduate Symposium - Team Player

Dr Simon Wilkins and Dr Gillian Nixon (Ritchie Centre)
Highly Commended, Southern Health Research Week Poster Award, Paediatrics Research

Dr Dakang Xu
- Long-Jiang Scholar Professor (2010-2012), State Council, Chinese Government
- Milstein Travel Award, International Society for Interferon and Cytokine Research

Centre for Innate Immunity and Infectious Diseases

Centre Director: Professor Paul Hertzog
Research Group Leaders: Dr Richard Ferrero, Associate Professor Brendan Jenkins, Dr Ashley Mansell

The Centre for Innate Immunity and Infectious Diseases researches the molecular regulation of the innate immune response. This early immune response determines how the body responds to infection by pathogens. It 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 contribute to the development of new approaches to the prevention, diagnosis and treatment of disease.

The research undertaken within the Centre requires considerable funding to support salaries, student scholarships, consumables and equipment. The funding is obtained through hard work of the researchers, for whom a significant part of their time is devoted to preparing grant applications. In a climate of tough government budget constraints where less than 25 percent of applications are funded, 2010 was an outstanding year for the Centre, with 58 percent of applications to the National Health and Medical Research Council (NHMRC) and Australian Research Council (ARC) successful. This will underpin the Centre's research efforts for the next three years.

The Molecular Regulation of Immunity Laboratory, led by Professor Paul Hertzog, was awarded three grants from the NHMRC and ARC to support their investigations into the role of a novel cytokine in regulating immune responses in the female reproductive tract. This is an exciting new research project into reproductive tract infections with HIV, HPV, HSV and chlamydia, which represent major health and socioeconomic problems worldwide. This funding includes a prestigious award of a five-year ARC fellowship to Dr Niamh Mangan who came to the Centre from Trinity College, Dublin, to work on this problem.

The Gastrointestinal Infection and Inflammation Laboratory, led by Dr Richard Ferrero, was awarded two grants from the NHMRC, as well as an ARC Discovery grant awarded to Dr Maria Kaparakis-Liaskos. These grants will support investigations into the role in disease of Helicobacter pylori, a bacterium that infects half of the global population and is the major cause of stomach cancer and peptic ulcer disease. In addition to these research programs, Dr Cody Allison was awarded a one-year Fellowship from the Cancer Council Victoria to pursue work on a potential new link between a known inflammatory molecule and gastric cancer development.

The Cytokine Signalling Laboratory, led by Associate Professor Brendan Jenkins, was awarded three grants from the NHMRC, Cancer Council of Victoria and the Association for

Drs Niamh Mangan and Maria Kaparakis-Liaskos

International Cancer Research to support their investigations into the role of cytokines in promoting cancer of the lung and stomach, the two most common causes of cancer-related deaths worldwide. In addition to these research programs, Dr Gareth Jones from Cardiff University was awarded an Arthritis UK Travelling Fellowship to join the laboratory for one year to study the role of a recently identified cytokine in arthritis.

Dr Ashley Mansell's Toll-like Receptor (TLR) Signalling Laboratory received two NHMRC grants to further their research into the role of the TLR signalling pathways in human innate immunity. These diverse projects will provide a structural analysis of key signalling molecules involved in generating the inflammatory response to infections, thus providing potential therapeutic treatments. In addition, the group will also work with Associate Professor Mark Hedger (Centre for Reproduction and Development) to investigate 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.

Research highlights

Vitamin B_6 is required for full motility and virulence in Helicobacter pylori

Helicobacter pylori is highly adapted to the harsh environment of the stomach, yet the factors that allow this bacterium to persist in this niche have not been fully understood. From comparative gene array studies of mouse-colonising and laboratory-attenuated H. pylori bacteria, Dr Ferrero and his team identified as putative novel colonisation factors, two open-reading frames (ORFs), HP1582 and HP1583, annotated as being homologues of PdxJ and PdxA, enzymes in the de novo vitamin B_6 biosynthesis pathway. This finding has now been confirmed experimentally, by showing that the products of HP1582 and HP1583, respectively are able to restore the growth of auxotrophic E. coli pdxJ and pdxA strains in vitamin B_6-deficient culture media.

Consistent with these data, H. pylori pdxA bacteria grew poorly in media that had not been supplemented with vitamin B_6. Importantly, PdxA was essential for the establishment of a chronic infection in mice by two different mouse-colonising H. pylori strains. Moreover, this enzyme was necessary for the synthesis of glycosylated flagella and flagella-based motility. Thus, for the first time, it has been shown that vitamin B_6 biosynthesis is not only important for cellular metabolism, but also for bacterial virulence. Interestingly, vitamin B_6-dependent enzymes have been identified as mediating the synthesis of surface-exposed structures involved in adhesion and colonisation by various bacterial pathogens. As PdxA/J homologues are present in a number of human pathogens (e. g. Salmonella enterica and Vibrio cholerae), but not in mammalian cells, Dr Ferrero proposed that these enzymes may represent new therapeutic targets for the control of bacterial infections.

Grubman A, Phillips A, Thibonnier M, Kaparakis-Liaskos M, Johnson C, Thiberge JM, Radcliff FJ, Ecobichon C, Labigne A, de Reuse H, Mendz GL, Ferrero RL (2010) Vitamin B_6 is required for full motility and virulence in Helicobacter pylori. MBio 1:e00112-10

Transcript profiling of Elf5+/- mammary glands during pregnancy identifies novel targets of Elf5

Elf5, an epithelial specific Ets transcription factor, plays a crucial role in the pregnancy-associated development of the mouse mammary gland. Elf5(-/-) embryos do not survive, however the Elf5(+/-) mammary gland displays a severe pregnancy-associated developmental defect. While it is known that Elf5 is crucial for correct mammary development and lactation, the molecular mechanisms employed by Elf5 to exert its effects on the mammary gland are largely unknown.

Transcript profiling was used to investigate the transcriptional changes that occur as a result of Elf5 haploinsufficiency in the Elf5(+/-) mouse model. We show that the development of the mouse Elf5(+/-) mammary gland is delayed at a transcriptional and morphological level, due to the delayed increase in Elf5 protein in these glands. We also identify a number of potential Elf5 target genes, including Mucin 4, whose expression, is directly regulated by the binding of Elf5 to an Ets binding site within its promoter.

We identify novel transcriptional targets of Elf5 and show that Muc4 is a direct target of Elf5, further elucidating the mechanisms through which Elf5 regulates proliferation and differentiation in the mammary gland.

Rogers RL, Van Seuningen I, Gould J, Hertzog PJ, Naylor MJ, Pritchard MA (2010) Transcript profiling of Elf5+/- mammary glands during pregnancy identifies novel targets of Elf5. PLoS One 5:e13150.

(Reprinted from PLoS One 5:e13150)

Grants Awarded in 2010

National Health and Medical Research Council (NHMRC) Grants

R Ferrero, B Jenkins
NHMRC Project Grant: *Epithelial cell signalling and host responses to virulent Helicobacter pylori strains* (2011-13)
$485,022

R Ferrero, P Sutton
NHMRC Project Grant: *The impact of virulence gene polymorphisms on Helicobacter pylori pathogenesis* (2011-13)
$ 432,957

B Jenkins
NHMRC Project Grant: *Deregulated cytokine signalling as a molecular bridge linking the pathogenesis of emphysema and lung cancer* (2011-13)
$506,706

P Hansbro, P Hertzog
NHMRC Project Grant: *A novel reproductive tract factor that protects against chlamydia* (2011-13)
$522,456

M Hedger, A Mansell, A Meinhardt
NHMRC Project Grant: *Toll-like receptors and MyD88 signalling in the testis* (2011-13)
$481,299

B Kobe, A Mansell, N Gay
NHMRC Project Grant: *Molecular and structural basis of signalling by TIR domain-containing adaptors in TLR pathways* (2011-13)
$643,416

F Mackay, P Hertzog
NHMRC Project Grant: *The role of BAFF, its receptor TACI and toll-like receptors in autoimmunity and tolerance* (2011-13)
$470,022

N Mangan
NHMRC Project Grant: *The role of a novel cytokine of the innate immune response in viral infection* (2011-13)
$332,524

S Ruwanpura
NHMRC Biomedical Training Fellowship (Australia): *Deregulated cytokine signalling as a molecular bridge between the pathogenesis of emphysema and lung cancer* (2010-13)
$265,000

A Miller
NHMRC Medical/Dental Postgraduate Scholarship (2010-11)
$73,913

B Williams, P Hertzog, B Jenkins, C Mackay, F Mackay, G Risbridger, E Wallace, DN Watkins
NHMRC Equipment Grant: *Covaris E-Series/Agilent Bioanalyzer 2100* (2011)
$168,902

Australian Research Council (ARC) Grants

PC Andrews, PC Junk, RL Ferrero, L Kedzierski
ARC Discovery Grant: *Bio-inspired chemistry of novel metal-organic bismuth compounds* (2011-13)
$480,000

M Kaparakis-Liaskos
ARC Discovery Grant: *Designing effective Gram negative bacterial vaccines* (2011-13)
$240,000

N Mangan
Primary Australian Research Fellow & QEII Fellow: *The role of a novel protein, interferon epsilon, in reproductive tract immunity* (2011-15)
$600,000

Cancer Council Victoria Grants

C Allison
Cancer Council Victoria Postdoctoral Cancer Research Fellowship: *Modulation of anti-tumour and inflammatory signalling during gastric cancer* (2011)
$67,508

B Jenkins
Cancer Council Victoria Project Grant: *Novel regulation of micro RNAs by cytokine signalling pathways in gastric inflammation and cancer* (2011-13)
$292,524

B Parker, P Hertzog
Cancer Council Victoria Grant-in-Aid: *Silencing of Irf7 expression in breast cancer cells as a mechanism of immune escape during metastasis* (2011-12)
$197,016

Association for International Cancer Research Grant

B Jenkins
Novel regulation of microRNAs by cytokine signalling pathways in gastric inflammation and cancer (2011-13)
GBP 192,000

Monash University Grants

C Kennedy
Faculty of Medicine, Nursing and Health Sciences Faculty Bridging Postdoctoral Fellowship (2010)
$30,000

N Mangan
Faculty of Medicine, Nursing and Health Sciences Strategic Grant Scheme: *To determine the role of a novel cytokine in protection against herpes simplex virus-2 infection* (2010)
$35,000

A Mansell
Monash Researcher Accelerator Program (2011-12)
$81,000

Philanthropic Grants

C Kennedy
Post Doctoral Travel Fellowship Harold Mitchell Foundation, $5,000

Scholarships, Awards and Promotions

Cody Allison
Southern Health Research Week Poster Prize

Ka Ye Fung
Third prize, MIMR Postgraduate Symposium (4th year)

Alex Grubman
Poster prize, European Molecular Biology Organisation Meeting 2010

Associate Professor Brendan Jenkins
International Society for Interferon and Cytokine Research Travel Award

Dr Gareth Jones
Arthritis Research UK Travelling Fellowship

Dr Maria Kaparakis-Liaskos
- Australian Microscopy and Microanalysis Research Facility Travel and Access Program Grant
- European Society of Clinical Microbiology and Infectious Diseases Early Research Career Attendance Grant

Dr Catherine Kennedy
- Poster Prize, Victorian Infection and Immunity Network conference
- Monash University Faculty of Medicine, Nursing and Health Sciences Travel Grant
- International Society for Interferon and Cytokine Research Travel Grant

Dr Niamh Mangan
- Runner up, World Health Summit
- Pfizer Award for Innovation in Biomedical Research
- Ian Potter Foundation Travel Grant
- Monash University Faculty of Medicine, Nursing and Health Sciences Travel Award
- International Society for Interferon and Cytokine Research Travel Award

Alistair Miller
Best Overall Poster Prize, annual Transplantation Society of Australia and New Zealand Conference

D Saleela Rawanpura
Winner, Southern Health Research Week Poster Award, Inflammatory and Infectious Diseases

Centre for Reproduction and Development

Centre Director: Professor Justin St John
Research Group Leaders: Associate Professor Mark Hedger, Dr Ursula Manuelpillai, Dr Paul Verma, Dr Patrick Western

The Centre for Reproduction and Development conducts research into how human disease is propagated and transmitted using innovative reproductive, developmental and stem cell biology approaches. Critical research that was carried out by CRD scientists in 2010 involved investigating how amnion cells can be used for transplantation purposes and how somatic cells can be reprogrammed to behave as stem cells. Research in the field of germ cell development is also being furthered to look at how genetic and epigenetic processes during early germ cell development can give rise to germ cell tumours, with the appointment of Dr Patrick Western.

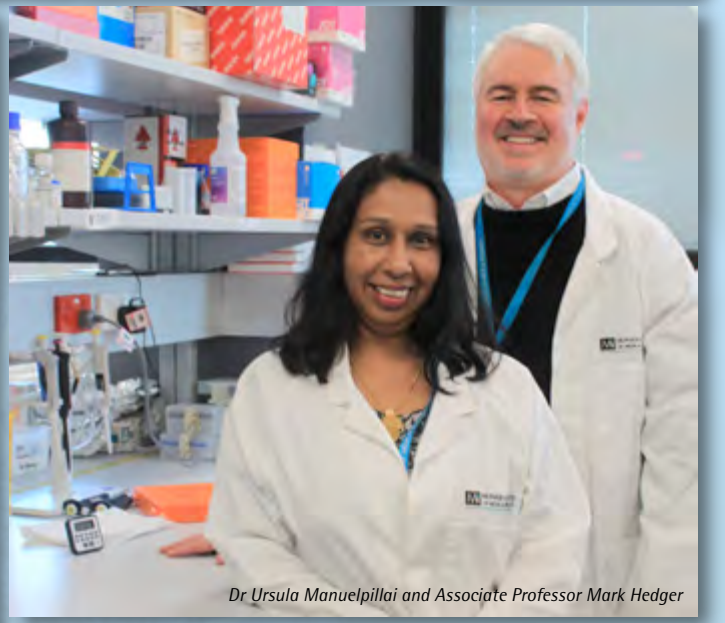
Research carried out by two of the Centre's senior scientists was recognised with significant grants. Associate Professor Mark Hedger received $481,299 from the NHMRC to further his research into the immune regulation of the testis. Dr Paul Verma received $158,627 from Mesoblast to investigate how induced pluripotency can be improved to generate stem cell models of disease and $495,000 from a Cooperative Research Centre Grant to develop strategies to derive male populations of cattle.

Since taking up the position of Centre Director in late 2009, Professor Justin St John has made significant progress toward refocusing the research of the Centre to converge on furthering the understanding of specific processes underlying genetic and epigenetic basis of disease, and has also activated his own program of research, which focuses on how mitochondrial DNA is transmitted and replicated through the oocyte into the embryo and into the offspring. Career highlights include generating the first cloned offspring that inherit their mitochondrial DNA in the same manner as an animal produced through normal conception.

Throughout 2010, Associate Professor Mark Hedger also continued the Centre's renowned work into the role of the hormone follistatin in reproductive biology, and the variety of roles that come with having a such a well-respected international reputation in his field, including most recently the invited speaker and conference organiser role for the XI International Congress of Reproductive Immunology, 2010.

Dr Paul Verma continued to work on producing induced pluripotent stem cells; cells from a part of the body such as skin that are reprogrammed to act as embryonic stem cells, and was senior author of one of the Centre's 2010 research highlight publications (see below).

Dr Ursula Manuelpillai received a prestigious early career enhancer award from the University to help fast-track her career, which will commence in 2011. She has recently published important research that has attracted



Dr Ursula Manuelpillai and Associate Professor Mark Hedger

much media attention on how amnion stem cells can induce repair of the damaged lung, and was senior author of one of the Centre's top 2010 research highlight publication.

This year, the Centre appointed Dr Patrick Western as a new Group Leader, a leading Australian scientist in the fetal germ cell biology field. His expertise centres on germ cell development and epigenetic regulation. He joins us from the Murdoch Children's Research Institute, where he was recruited following his post-doctoral position (2000-2003) in the laboratory of Professor Azim Surani at the prestigious Gurdon Institute, Cambridge University, UK.

In the last year, the Centre has consolidated its change in research direction, which has been enhanced by the successful recruitment of two stellar young scientists who will take up their appointments as new group leaders in the early part of 2011. We also celebrate the return of our founder, Professor David de Kretser, following a five-year sabbatical as Governor of Victoria.

Research Highlights

Human amnion epithelial cell transplantation abrogates lung fibrosis and augments repair

Chronic lung disease characterised by loss of lung cells, inflammation and fibrosis (scarring) represents a major global health burden. Cellular therapies that could restore lung epithelium and reduce inflammation and fibrosis would be a major advance in the management of these conditions. We investigated if human amnion epithelial cells (hAECs), isolated from term placenta and known to display stem cell-like and anti-inflammatory properties, could adopt an alveolar epithelial phenotype and repair a murine model of Bleomycin-induced lung inflammation and fibrosis.

Primary hAECs were cultured in Small Airway Growth Medium (SAGM) to determine if the cells could adopt an alveolar epithelial phenotype. Undifferentiated primary hAECs were also injected intra-venously into SCID mice following Bleomycin-induced lung injury and analysed for production of surfactant protein (SP)-A, -B, -C and –D; known to be produced by lung epithelial cells. Mouse lungs were also analysed for inflammation and collagen deposition. We found that hAECs grown in SAGM developed an alveolar epithelial phenotype as evidenced by lamellar body formation, production of SPs A-D and secretion of SP-D. In vivo studies showed that although the primary hAECs that were injected into mice lacked SPs, hAECs that were recovered from mouse lungs two weeks post-transplantation produced SPs. hAECs could be detected over the four week test period in mouse lungs. Further, mice receiving hAEC showed reduced inflammation in the lungs in association with decreased MCP-1, TNF-α IL-1, IL-6 and the pro-fibrotic cytokine TGF-α In addition, lung collagen content was significantly lower in mice receiving hAEC treatment, possibly due to increased degradation of collagen by matrix metalloproteinase-2 and downregulation of matrix metalloproteinase inhibitors the tissue inhibitors of matrix metalloproteinase (TIMP)-1 and - 2.

The findings suggest that hAECs offer promise as a cellular therapy for alveolar epithelial restitution and reducing inflammation and fibrosis of the lung.

Moodley Y , Ilancheran S, Samuel C, Vaghjiani V, Atienza D, Williams ED, Jenkin G, Wallace E, Trounson A, Manuelpillai U (2010) Human amnion epithelial cell transplantation abrogates lung fibrosis and augments repair. Am J Respir Crit Care Med 182:643-651.

The efficient generation of induced pluripotent stem (iPS) cells from adult mouse adipose tissue-derived and neural stem cells

Ectopic expression of key reprogramming transgenes in somatic cells enables them to adopt the characteristics of pluripotency. Such cells have been termed induced pluripotent stem (iPS) cells and have revolutionised the field of somatic cell reprogramming, as the need for embryonic material is obviated. One of the issues facing both the clinical translation of iPS cell technology and the efficient derivation of iPS cell lines in the research laboratory is choosing the most appropriate somatic cell type for induction.

In this study, Dr Verma's team demonstrated the direct reprogramming of a defined population of neural stem cells (NSCs) derived from the subventricular zone (SVZ) and adipose tissue-derived cells (ADCs) from adult mice using retroviral transduction of the Yamanaka factors Oct4, Sox2, Klf4 and c-Myc, and compared the results obtained with a mouse embryonic fibroblast (mEF) control. They isolated mEFs, NSCs, and ADCs from transgenic mice, which possess a GFP transgene under the control of the Oct4 promoter, and validated GFP expression as an indicator of reprogramming.

While transduction efficiencies were not significantly different among the different cell types (mEFs 68.70

+/- 2.62%, ADCs 70.61 +/- 15.4%, NSCs 68.72 +/- 3%, P = 0.97), the number of GFP-positive colonies, and hence the number of reprogramming events, was significantly higher for both NSCs (13.50 +/- 4.10 colonies, 0.13 +/- 0.06%) and ADCs (118.20 +/- 38.28 colonies, 1.14 +/- 0.77%) when compared with the mEF control (3.17 +/- 0.29 colonies, 0.03 +/- 0.005%). ADCs were most amenable to reprogramming with an 8- and 38-fold greater reprogramming efficiency than NSCs and mEFs, respectively. Both NSC iPS and ADC iPS cells were demonstrated to express markers of pluripotency and could differentiate to the three germ layers, both in vitro and in vivo, to cells representative of the three germ lineages.

Dr Verma's findings confirmed that ADCs are an ideal candidate as a readily accessible somatic cell type for high efficiency establishment of iPS cell lines.

Tat PA, Sumer H, Jones KL, Upton K, Verma PJ (2010) The efficient generation of induced pluripotent stem (iPS) cells from adult mouse adipose tissue-derived and neural stem cells. Cell Transplant 19:525-536.

Grants Awarded in 2010

National Health and Medical Council (NHMRC) Grants

M Hedger, A Mansell, A Meinhardt
NHMRC Project Grant: *Toll-like receptors and MyD88 signalling in the testis* (2011-13)
$481,299

W Winnall
NHMRC Biomedical Training Fellowship (Australia) (2011-14)
$290,032

Commercial Grant

P Verma
Generation of safe iPSCs from defined cell populations
(2010-11)
Mesoblast, $158,627

Cooperative Research Centre Grant

P Verma
Single sex bovine populations
(2010-12)
$495,000

Monash University Grants

M Hedger
Monash University Faculty of Medicine, Nursing and Health Sciences Near-Miss (NHMRC) Grant (2010)
$20,000

U Manuelpillai
Monash Researcher Accelerator Program (2011-12)
$74,000

JC St John, D Grammatopoulos
The University of Warwick-Monash University stem cell transdifferentiation research program (2010)
$29,800

Philanthropic Grants

C Heffernan
Senior PhD Student Travel Fellowship
Harold Mitchell Foundation, $5,000

P Western
Investigating testis cancer stem cells (2010)
ANZ Trustees James & Vera Lawson Trust, $24,602

Scholarships, Awards and Promotions

Dr Denise Miles
- Victoria Fellowship Award, Victorian Government
- 60th Interdiscipinary Meeting of Nobel Laureates Fellowship, Lindau, Germany
- Euroscience Open Forum Fellowship Recipient, Torino, Italy

Ritchie Centre / Centre for Women's Health Research

Centre Directors: Professor Euan Wallace / Professor David Healy
Deputy Directors: Dr Caroline Gargett, Professor Stuart Hooper,
Associate Professor Rosemary Horne, Professor Graham Jenkin
Research Group Leaders: Dr Philip Berger, Dr Susie Miller, Dr Tim Moss, Dr Gillian Nixon, Professor David Walker, Dr Megan Wallace

2010 was a big year for the Ritchie Centre. In January, Professor Euan Wallace took up the post of Centre Director from Acting Director, Dr Philip Berger. Euan joined the Ritchie Centre from MIMR's Centre for Women's Health Research, integrating the Monash University Department of Obstetrics and Gynaecology more closely with both Centres. Also joining the existing research teams of Associate Professor Rosemary Horne and Dr Philip Berger in the Ritchie Centre were the research teams of Professors Stuart Hooper and David Walker (from Monash University Department of Physiology), Professor Graham Jenkin (from Monash Immunology and Stem Cell Laboratories), and Drs Stephen Tong and Caroline Gargett (from the Centre for Women's Health Research). In all, the Ritchie Centre increased from 19 staff and five students to 63 staff and 40 students overnight!

As a result of the expansion, the Centre was divided into four research themes. Each Theme Leader was appointed as Ritchie Centre Deputy Director.

Women's Health: Caroline Gargett

Fetal and Neonatal Health: Stuart Hooper

Infant and Child Health: Rosemary Horne

Cell Therapy and Regenerative Medicine: Graham Jenkin

The closer relationship between the Centre for Women's Health Research and the Ritchie Centre was timely as it coincided with the award of a Strategic Development Grant from the Australian Stem Cell Centre to commence a tissue engineering project as a novel treatment for pelvic organ prolapse in collaboration with the CSIRO. Synergies between the Women's Health and the Cell Therapy and Regenerative Medicine themes were quickly realised, with funding from the Federal Government's Research Infrastructure and Support Program (RISS) awarded to both themes for two cell therapy projects. Another joint venture was the organisation of the Regenerative Medicine Challenges in Obstetrics and Gynaecology Symposium at the Tissue Engineering and Regenerative Medicine International Society - Asia Pacific meeting. Other highlights for Women's Health include the award of a Cancer Council Victoria Postdoctoral Fellowship and RANZCOG funding to Sonya Hubbard for her work on endometrial cancer stem cells.

To meet the needs of this growing family, in collaboration with central animal services, the Ritchie Centre redeveloped

Sonya Hubbard and Dr Tamara Yawno

the Monash Medical Centre / MIMR large animal facility, creating some of the best such facilities in the country. The Centre's laboratory facilities in MIMR were also upgraded, including the refurbishment of a core cell culture facility.

Funding plays a major role in the activities of any research centre, and 2010 was a highly successful year for the Ritchie Centre, including a prestigious NHMRC Program Grant, awarded to Stuart Hooper, and Ritchie Centre researchers were involved in nine new NHMRC Project Grants. In addition, Ritchie researchers were awarded two ARC Discovery Grants, an American Asthma Foundation Fellowship, a Grand Challenges Explorations Grant from the Bill and Melinda Gates Foundation, grants from the UK Foundation for the Study of Infant Deaths and the Scottish Cot Death Trust, RISS funding, three grants from the Cerebral Palsy Foundation, and four Scholarships from the RANZCOG Research Foundation. Graeme Polglase and Suzie Miller were also awarded Monash University Accelerator Grants.

The Centre ran several research meetings in 2010, including the 2010 Ritchie Colloquium Perinatal Inflammation with Professor John Griffin (The Scripps Research Institute, La Jolla) and Professor Paul Monagle (the University of Melbourne); Perinatal Brain Protection, a mini symposium with Professor Nadia Badawi and Dr Iona Novak from the Cerebral Palsy Institute, Sydney; Bench to Bedside and Beyond: Transforming Ideas into Products – a Special Symposium with industry and regulators; The Challenges of Being Born Too Early – a business breakfast with the Healthy Start to Life Network; Meet the Professor Breakfast, with Professor Alan Trounson (CIRM, CA); and the annual Kaarene Fitzgerald Lecture. The Centre also hosted a number of VIP visitors including Professor Bill Parer (UCSF) and Professor Jan Deprest (Leuven, Belgium).

Sadly, the Centre said goodbye to Vojta Brodecky at the end of 2010. Vojta has been the senior manager of the Centre for... well, too long to remember. We wish Vojta well in his retirement and thank him for all his efforts over many, many years and particularly over this last, very busy year.

Bring on 2011!

Research Highlights

IL-37: a fundamental inhibitor of innate immunity

The function of interleukin 37 (previously known as IL-1 family member 7) has remained unknown, although 10 years have passed since its discovery in silico. Dr Nold and his team showed that the abundance of pro-inflammatory cytokines in primary human blood cells increased upon silencing of IL-37, whereas anti-inflammatory cytokines remained unaffected.

Consistent with these findings, expression of IL-37 in THP-1 and RAW macrophages and in A549 lung epithelial cells suppressed pro-inflammatory mediators by up to 98%. Compared to wild-type, mice transgenic for IL-37 exhibited markedly improved lung and kidney function and reduced liver damage after i.p.-injection of LPS, accompanied by a profound (up to 95%) reduction of pro-inflammatory cytokines in plasma, lungs, and spleens. Moreover, IL-37 reduced the activation of dendritic cells to near baseline. Whole blood assays demonstrated that the protective properties of IL-37 also included inflammation triggered by IL-1α, TNF, LPS/IL-12, and IL-12/IL-18. Mechanistically, IL-37 formed a functional complex with Smad3, and IL-37-expressing cells and transgenic mice exhibited reduced cytokine suppression when endogenous Smad3 was depleted. Therefore, IL-37 emerges as a natural suppressor of innate inflammatory and immune responses.

Nold MF, Nold-Petry CA, Zepp JA, Palmer BE, Bufler P, Dinarello CA (2010) IL-37 is a fundamental inhibitor of innate immunity. Nat Immunol 11:1014-1022.

Mechanism underlying accelerated arterial oxygen desaturation during recurrent apnea

Despite clear evidence that brief recurrent apneas in preterm infants and adults can give rise to very rapid and severe loss of arterial oxygen, there is currently no satisfactory explanation for the phenomenon. With insights gained from a mathematical model of the respiratory system, Dr Berger and his team hypothesised that when breathing terminates an apnea, mixed venous hypoxaemia persists well into the next apnea in the series. The effect of severely depleted venous blood reaching the lung during a subsequent apnea is the creation of a surge in pulmonary oxygen uptake that rapidly depletes the finite alveolar oxygen store, thereby accelerating arterial oxygen desaturation.

To test the hypothesis, recurrent apneas in an experimental lamb model were simulated, and arterial and mixed-venous oxygen and cardiac output were continuously measured. From these data, pulmonary oxygen uptake was calculated as a continuous function. The results revealed an asynchrony in the desaturation and resaturation of arterial and venous blood that gave rise to dips and surges in pulmonary oxygen uptake. When desaturation during an apnea was allowed to reach 50%, a typical nadir in preterm infants, oxygen uptake surged to a peak of 176.9±7.8% of metabolic rate. During subsequent apneas, desaturation rate was 2–3 fold greater than during isolated apneas, in direct proportion to the magnitude of the surge in oxygen uptake ($P<0.001$, $R2=0.897$). When the mathematical model was applied to a published recording of cyclic apneas in a preterm infant, the accelerated desaturation rates of up to 15 % s-1 observed clinically were precisely reproduced.

It was concluded that rapid depletion of alveolar oxygen stores via surges in oxygen uptake almost completely explains rapid desaturations reported to occur during recurrent apnea. Dr Berger and his team's findings are likely to explain the severity of intermittent hypoxaemia that is associated with neurocognitive and cardiovascular morbidities in preterm infants and adults.

Sands SA, Edwards BA, Kelly VJ, Skuza EM, Davidson MR, Wilkinson MH, Berger PJ (2010) Mechanism underlying accelerated arterial oxygen desaturation during recurrent apnea. Am J Respir Crit Care Med 182:961-969.

Grants Awarded in 2010

National Health and Medical Research Council (NHMRC) Grants

S Hooper
NHMRC Program Grant: *Improved respiratory support and outcomes for very preterm babies* (2011-15)
$8,560,000

M Black, G Polglase
NHMRC Project Grant: *Does maladaptive remodelling of the heart and vasculature in response to preterm birth lead to long-term cardiovascular risk?* (2011-13)
$516,706

J Hirst, D Walker, H Parkington
NHMRC Project Grant: *Pathways of neurosteroid-mediated protection following compromised pregnancy and preterm birth* (2011-13)
$547,415

S Hooper, A Fouras, R Lewis
NHMRC Project Grant: *Imaging lung aeration and lung motion following very premature birth* (2011-13)
$500,022

R Horne, V Anderson, G Nixon, M Davey
NHMRC Project Grant: *Does treatment reverse the neurocognitive and cardiovascular sequelae of sleep disordered breathing in children?* (2011-13)
$501,884

R Horne, F Wong, A Walker
NHMRC Project Grant: *Developmental changes in cerebral oxygenation after term and preterm birth* (2011-13)
$430,022

G Nixon, R Horne, D Jolley, M Davey
NHMRC Project Grant: *Alternatives to polysomnography for children with suspected obstructive sleep apnoea* (2011-13)
$345,444

M Nold, C Nold
NHMRC Project Grant: *Unravelling IL-37: A neglected IL-1 family member with big-stage potential* (2011-13)
$337,524

S Ricardo, I Bertoncello, J Friend, L Yeo, S Miller
NHMRC Project Grant: *Postnatal therapy for organ growth and repair* (2011-13)
$522,957

S Tong, T Johns, E Wallace
NHMRC Project Grant: *Combination methotrexate and gefitinib to cure ectopic pregnancies: phase I-II clinical trials* (2011-13)
$228,770

P Paiva
NHMRC Biomedical Training Fellowship (Australia): *New approaches for predicting obstetric complication: measuring circulating RNA of feto-placental origin* (2011-14)
$290,032

H Richardson
NHMRC Biomedical Training Fellowship (Overseas): *Brain regions and mechanisms mediating cardiorespiratory control and arousal from sleep* (2010-13)
$265,000

K Palmer
NHMRC Biomedical Postgraduate Research Scholarship (2010-2012)
$107,750

S Hooper, A Fouras, K Siu
NHMRC Equipment Grant: PCO Scientific CMOS Camera, "pco.edge" (2011)
$25,000

B Williams, P Hertzog, B Jenkins, C Mackay, F Mackay, G Risbridger, E Wallace, DN Watkins
NHMRC Equipment Grant: Covaris E-Series/Agilent Bioanalyzer 2100 (2011)
$168,902

Australian Research Council (ARC) Grants

A Fouras, S Hooper, RA Lewis
ARC Discovery Grant: *In-vivo detection of airway injury and disease using phase contrast X-ray velocimetry* (2011-13)
$360,000

MJ Kitchen, S Hooper
QEII Fellow and ARC Discovery Grant: *Low dose methods for detecting early lung disease using x-ray phase contrast imaging* (2011-15)
$720,000

Australian Cystic Fibrosis Research Trust

G Jenkin, E Wallace
Research Project Grant: *Administration and engraftment of amnion stem cells for treatment of cystic fibrosis* (2011)
$92,517

Australasian Gynaecological Endoscopy & Surgery Society Ltd

A Rosamilia, C Gargett
Clinical Research Grant: *Estrogen treatment to induce endometrial regeneration in postmenopausal women scheduled to undergo hysterectomy, to obtain endometrial mesenchymal stem cells* (2010-11)
$10,000

Cancer Council Victoria

S Hubbard
Sydney Parker Smith Postdoctoral Cancer Research Fellowship: *Cell surface markers for identifying endometrial cancer stem cells* (2010-11)
$67,508

Cerebral Palsy Research Foundation

G Polglase, M Kluckow, S Miller, T Moss
Cerebral Palsy Institute Grant Program: *Reducing cerebral palsy by improving immediate resuscitation at preterm delivery* (2011-12)
$151,185

D Walker
Cerebral Palsy Institute Grant Program: *Hypoxia-induced bleeding in the fetal and newborn brain – a cause of cerebral palsy preventable by supplementing the mother's diet with creatine* (2010-11)
$137,040

F Wong
Cerebral Palsy Research Foundation Career Development Grant: *To reduce cerebral palsy caused by birth asphyxia - therapies targeting at two specific mechanisms underlying the newborn brain Injury* (2010-11)
$40,000

Children's Hospital Philadelphia

R Horne
CAP-S Study (2010)
$43,125

Financial Markets Foundation for Children

K Tan, P Berger, A Ramsden
Project Grant: *Oxygen therapy for the preterm infant - optimising delivery* (2010-11)
$81,800

Fisher & Paykel

P Berger
Mucociliary movement study (2010-11)
$185,000

Foundation for the Study of Infant Death UK

R Horne, F Wong, S Yiallarou
Project Grant: *Mechanisms for the protective effects of dummies* (2010-11)
GBP 85,790

Monash University

R Lim
Faculty of Medicine, Nursing and Health Sciences Strategic Grant Scheme: *Investigating the role of activin A as a causative agent in the oxidative stress of preeclampsia* (2010)
$40,000

S Miller
Monash Researcher Accelerator Program (2011-12)
$75,000

G Polglase
Monash Researcher Accelerator Program (2011-12)
$76,000

Prostate Cancer Foundation of Australia

C Gargett, G Risbridger
Concept Grant: *Identifying progenitor cells in prostate tumour stroma* (2010-12)
$258,000

Research Infrastructure Support Services

C Gargett
Establishment and compliance of quality systems research access. pelvic floor repair using scaffolds and MSC (2010-11)
$50,000

Scottish Cot Death Trust

R Horne, F Wong, S Yiallarou
Project Grant: *A mechanism for the increased risk of the Sudden Infant Death Syndrome in infants sleeping in the prone position* (2010)
GBP 36,000

Victorian Managed Insurance Authority

K Palmer
Keith Fitzmaurice Bursary: *Therapeutic antibody development: a potential treatment for preeclampsia* (2010)
$25,000

Research Agreement

G Jenkin, N Hall
ProteoBioactives Pty Ltd: *Evaluation of the relative effectiveness of Mesoblast's allogeneic mesenchymal precursor cells (MPCs) alone or formulated with pentosanpPolysulfate (PPS) to heal full depth osteochondral defects in ovine cartilages* (2010-11)
$39,555

RANZCOG Research Foundation Scholarships

S Hubbard
RANZCOG Research Foundation, Ella Macknight Scholarship: *Identification of endometrial cancer stem cell surface markers* (2011-12)
$50,000

R Lim
RANZCOG Research Foundation, Luke Proposch Perinatal Research Scholarship: *Preclinical trial for preeclampsia - pregnancy induced hypertension and endothelial dysfunction* (2011-12)
$20,000

K Palmer
RANZCOG Research Foundation, Arthur Wilson Memorial Scholarship: *Therapeutic antibody development: a potential treatment for preeclampsia* (2011-12)
$60,000

T Yawno
RANZCOG Research Foundation, Glyn White Research Fellowship: *Novel cell based therapy for the treatment of perinatal brain injury* (2011-12)
$60,000

International Synchrotron Access Program Travel Grants

B Alison
Phase contrast x-ray imaging of the lung (visit to Japanese Synchrotron)
$9,800

Mohammed Islam, Stuart Hooper, Megan Wallace
Phase contrast x-ray imaging of the lung (visit to Japanese Synchrotron)
$9,800

Melissa Siew
Phase contrast x-imaging of the lung (visit to Japanese Synchrotron)
$5000

Philanthropic Grants

H Dickinson
Equipment Grant: *The effects of stress in pregnancy on offspring behaviour Equipment: startle response system, a video-tracking package*
ANZ Trustees - A&M Osborn Trust, $27,880

C Gargett
Using women's own uterine mesenchymal stem cells for tissue engineering the pelvic floor
Equity Trustees - Walter Cottman Endowment Fund, $40,000

S Hooper, A Fouras, RA Lewis, K Siu
Imaging lung motion for studying the dynamics of asthma and its treatments
Special Investigator Award, American Asthma Foundation, USD 750,000

S Miller
Post Doctoral Research Fellowship (2010-11)
Matsarol Foundation, $99,050

M Nold, C Nold, A Veldman
*Anti-inflammatory therapy in preterm infants with bro*ncho-pulmonary dysplasia
Jack Brockhoff Foundation, $40,000

E Wallace, S Miller
Bill & Melinda Gates Foundation Grand Challenges Explorations Initiative - Project Grant
Melatonin to prevent birth asphyxial brain injury,
USD 100,000

Scholarships, Awards and Promotions

Ana Baburamani
Second prize, 2010 MIMR Postgraduate Symposium (4th year)

Melinda Dolan
Poster prize, Healthy Start to Life

Rob Galinsky
Second prize, MIMR Three Minute Thesis competition

Angela Jackman
Third prize, Best Poster, Australasian Sleep Association Meeting

Anna Kourbasis
PhD Scholarship (2010-11)
JH & HTE Maloney, $30,000

Annie McDougall
- New Investigator Award, Perinatal Society of Australia and New Zealand
- First prize, 2010 MIMR Postgraduate Symposium (4th year)

Dr Gillian Nixon and Dr Simon Wilkins (Centre for Cancer Research)
Highly Commended, Southern Health Research Week Poster Award, Paediatrics Research

Dr Denise O'Driscoll
- First prize, oral presentation, Thoracic Society of Australia and New Zealand
- CASS Foundation Limited Travel Grant
- Heart Foundation Travel Grant

Dr Kirsten Palmer
Presenters Award, Society for Gynaecalogic Investigation Annual Scientific Meeting

Heidi Richardson
Finalist, International Society for the Study and Prevention of Perinatal and Infant Death New Investigator Award

Scott Sands
- Mollie Holman Doctoral Medal: Best PhD Thesis, Monash University Faculty of Medicine, Nursing and Health Sciences
- Best poster, Australasian Sleep Association Meeting
- Travel Award, European Respiratory Society Meeting

Melissa Siew
- Winner, MIMR Three Minute Thesis competition
- Runner up, Faculty of Medicine, Nursing and Health Sciences Three Minute Thesis Competition

Alana Westover
- Third prize, 2010 MIMR Postgraduate Symposium (3rd year)
- Third prize, MIMR Three Minute Thesis Competition

Dr Clare Whitehead
Early Career Poster Award, Society for Gynaecalogic Investigation Annual Scientific Meeting

Dr Flora Wong
Winner, Southern Health Research Week Poster Award, Neonatal and Women's Health Research

Dr Tamara Yawno
Winner, Southern Health Research Week Poster Award, Mental Health and Neuroscience

Dr Stephanie Yiallourou
Winner, Southern Health Research Week Poster Award, Paediatrics

VI Education

Visiting Speakers

MIMR Postgraduate Committee

Community Education

Education Events

Andrology Australia

2010 Graduates

Visiting Speakers

Dr Patrick Western
Team Leader and Senior Research Fellow, Murdoch Children's Research Institute, Melbourne
Walk the line: Germ cell differentiation and totipotency (29/1/10)

Professor David Gardner
Head of Zoology, the University of Melbourne
The ART of OMICS: How the OMICS are shaping the future of human IVF (18/3/10)

Dr Nick Clemons
Surgical Oncology Laboratory, Peter MacCallum Cancer Centre, Melbourne
Using 3-D tissue reconstitution models to study Barrett's oesophagus and adenocarcinoma (25/3/10)

Dr Vanessa Hall
Department of Basic Animal and Veterinary Sciences, Copenhagen University, Denmark
Development of porcine stem cells tools for studying Alzheimer's disease (26/3/10)

Dr Tony Panenfuss
Bioinformatics Division, the Walter and Eliza Hall Institute of Medical Research, Melbourne
New approaches to genome searching reveals novel MHC class I genes in mammals and insights into malaria (1/4/10)

Dr Kate Meehan
Senior Research Officer, Prince Henry's Institute, Melbourne
Luminex technology and applications (9/4/10)

Professor Alan Tilbrook
Department of Physiology, Monash University, Melbourne
Insights into how stress affects reproduction in females: and glucocorticoids involved? (13/4/10)

Dr Rod Dilley
Senior Research Scientist, Bernard O'Brien Institute of Microbiology, Melbourne
Engineering cardiac tissue for heart repair (15/4/10)

Dr Joanne Britto
Senior Research Officer, The Brain Development Laboratory, Howard Florey Institute, Melbourne
Time-lapse imaging: a useful tool in unravelling neocortical development (20/4/10)

Professor Tom Gonda
Head of Molecular Oncogenesis Laboratory, Diamantina Institute for Cancer, Immunology and Metabolic Medicine, University of Queensland
MYB in myeloid transformation and breast cancer (22/4/10)

Dr Stefan White
Senior Research Officer, Murdoch Children's Research Institute, Melbourne
Genetic and epigenetic plasticity in development and disease (23/4/10)

Dr Sarah Spencer
Department of Physiology, Monash University, Melbourne
Perinatal programming of adult immune function: can early life challenges increase susceptility to disease throughout life? (27/4/10)

Associate Professor Kurt Lushington
Associate Head of School, Discipline Head of Physiology, University of South Australia
The effect of sleep disruption on daytime functioning (28/4/10)

Professor Mark Febbraio
Head Cellular and Molecular Metabolism Laboratory, Head of Basic Science, Division of Metabolism and Obesity, Baker IDI Heart and Diabetes Institute
Activation of heat shock protein 72: a panacea for disease prevention? (29/4/10)

Dr John Edgar
Research Fellow, Division of Food and Nutritional Sciences, CSIRO; member, FAO/WHO Expert Committee on Food Additives
Growing recognition of a dietary contaminant capable of causing pulmonary hypertension, cirrhosis and cancer, especially in children (4/5/10)

Dr Paul King
Respiratory Physician, Southern Clinical School, Monash University, Melbourne
Respiratory infections (7/5/10)

Professor Paul Bonnington
Director, Monash e-Research Centre, Monash University, Melbourne
e-Research (7/5/10)

Professor Fred Mendelsohn AO
Past Director, and Honorary Senior Principal Research Fellow, Howard Florey Institute, Melbourne
Neural plasticity: implications for development, memory, rehabilitation and regeneration (13/5/10)

Professor David Vaux
ARC Federation Fellow, Department of Biochemistry, LaTrobe University, Melbourne
Ten rules for the presentation and interpretation of data in publications (18/5/10)

Professor John Funder
Director, Research Strategy, Southern Health
Hypertension and heart failure: lessons for basic biology from clinical studies (20/5/10)

Dr Trisha Jenkins
School of Medical Sciences, LaTrobe University, Melbourne
Modelling psychosis: is there a developmental cause? (25/5/10)

Professor George Muscat
Group Leader, Institute of Molecular Biosciences, University of Queensland
Orphan nuclear receptors and the Ski gene in skeletal muscle: insights into the regulation of adiposity and insulin signalling (27/5/10)

Professor Eric Morand
Group Head, Arthritis & Rheumatic Disease, Monash Centre for Inflammatory Diseases, Monash University, Melbourne
Control of inflammation and arthritis by corticosteroids (28/5/10)

Dr Ian Smythe
Department of Biochemistry, Monash University, Melbourne
Using mouse genetics to understand diseases of skin development (1/6/10)

Professor Andrew Elefanty
Professor, Embryonic Stem Cell Differentiation Laboratory, Australian Stem Cell Centre StemCore Facility, Monash Immunology and Stem Cell Laboratories
Genetic modification and differentiation of human embryonic stem cells: creating tools for regenerative medicine (1/6/2010)

Associate Professor Michael Hickey
Group Head, Leukocyte Trafficking Laboratory, Centre for Inflammatory Diseases, Monash University, Melbourne
Leaving the mainstream - leukocyte navigation of the inflamed microvasculature (3/6/10)

Dr Matthew McKenzie
NHMRC CDA Fellow, Biochemistry, La Trobe University, Melbourne
Assembly of mitochondrial complex 1 and defects in human disease (7/6/10)

Professor Richard Harding
Pulmonary Development and Programming Group, Monash University, Melbourne
What are the long-term effects of preterm birth? (8/6/10)

Livia Vo
Technical Sales Specialist, Invitrogen
Cell imaging: from chaos to order: introducing the attune, the first acoustic flow cytometer and its applications (9/6/10)

Dr Margareta Sutija
Drug discovery and assay development specialist, Perkin Elmer
The power of the alpha screen technology (11/6/10)

Professor Dominic Thyagarajan
Professor of Neuroscience and Director of Neurology, Monash University, Melbourne
Impaired transcription termination in the human mitochondrial genome: novel mechanism of disease (17/6/10)

Domenic LaRosa
Deakin University
Changes in muscle composition during development in the Australian fur seal (29/6/10)

Associate Professor Mary Wlodek
Head, Fetal, Postnatal and Adult Physiology and Disease Laboratory, Department of Physiology; Deputy Dean, Melbourne School of Graduate Research, the University of Melbourne
Solving the developmental programming puzzle – windows of opportunity for offspring born small (1/7/10)

Phyllis Di Palma & Dr Jennifer Scott
Research Degrees Office, Monash University, Melbourne
Confirmation of candidature and progress reviews (13/7/10)

Dr Tony White
Senior Research Fellow, Monash Cardiovascular Research Centre and Monash Heart, Melbourne
Cardiac regeneration: Realistic possibility or pipedream?" (15/7/10)

Associate Professor Lea Delbridge
Head, Cardiac Phenomics, Department of Physiology, the University of Melbourne
Perinatal origins of adult primary cardiac hypertrophy – a story of angiotensin II and cardiomyocyte autophagy (22/7/10)

Dr Matt Sweet
ARC Future Fellow, Honorary NHMRC Senior Research Fellow, Institute for Molecular Bioscience, University of Queensland
The good, the bad and the ugly of innate immunity: macrophage inflammatory and anti-microbial pathways (29/7/10)

Professor Andrew Sinclair
Theme Director, Early Development and Disease, Murdoch Children's Research Institute, Melbourne
Insights into disorders of testis development using whole genome analysis (5/8/10)

Dr Lyn Airey
Project Officer, CSIRO
Science in Schools (6/8/10)

Professor Andreas Meinhardt
Professor of Anatomy and Cell Biology, Justus-Liebig University, Germany
Host pathogen interaction in the testis (9/8/10)

Associate Professor Jonathan Hirst
School of Biomedical Sciences and Pharmacy, University of Newcastle
Neuroprotective deficits in the newborn guinea pig brain (10/8/10)

Dr Andrew Laslett
Research Team Leader, CSIRO Molecular and Health Technologies
Harnessing pluripotency: novel tools for human stem cell biology (10/8/10

Professor Claude C.A. Bernard
Deputy Director, Immunology and Stem Cell Laboratories (MISCL), Monash University, Melbourne
The promise of stem cells as a regenerative approach for the treatment of multiple sclerosis (12/8/10)

Dr Christine Gicquel
Epigenetics in Human Health and Disease Laboratory, Baker IDI Heart and Diabetes Institute, Melbourne
Human 11p15-related fetal growth disorders: a model to study genomic imprinting (19/8/10)

Dr Xiao-Jun Du
Laboratory Head, Experimental Cardiology, Baker IDI Heart and Diabetes Institute, Melbourne
The link between the reproductive hormone relaxin with cardiovascular diseases (26/8/10)

Professor Henry Burger
Emeritus Director, Prince Henry's Institute, Melbourne
Clinical research - a cautionary tale (2/9/10)

Professor David Handelsman
Director, ANZAC Research Institute, New South Wales
Androgens and male ageing (9/9/10)

Dr Anne Thompson
Executive Officer, Victorian Cancer Biobank
The Biobank: How do we support research? (10/9/10)

Zdenka Prodanovic
Tissue Bank Manager, Southern Health, Melbourne
Digital microscopy to support biomarker analysis (10/9/10)

Dr Alice Pebay
Senior Research Officer, O'Brien Institute, the University of Melbourne
Role of lysolipid signalling stem cell biology, (14/9/10)

Professor Charles Mackay
Head, Immunology, Inflammation and Therapeutic Antibodies, Monash University, Melbourne
New roles for chemoattractant receptors in inflammation, metabolism, and fibrosis (16/9/10)

Professor Richard Martin
Professor of Paediatrics, Cape Western Reserve University, Cleveland, Ohio, USA
Intermittent hypoxic episodes in preterm infants? Do they matter? (23/9/10)

Gianfranco de Feo
Senior Director, Marketing, Sequenom
Translating biomarker research to human health (29/9/10)

Professor Kim Cornish
Director, Developmental Neuroscience and Genetic Disorders Laboratory, School of Psychology and Psychiatry, Monash University, Melbourne
When being "fragile" takes on a whole new meaning: exploring gene to behaviour in fragile X syndrome (30/9/10)

Professor John Hodges
Professors of Cognitive Neurology, Neuroscience Research Australia, University of New South Wales
What's new in frontotemporal dementia: from FUS to fibs (7/10/10)

Kelly Ewen-White
Applied Biosystems
See the difference - the SOLid 4 system and beyond (8/10/10)

Professor Jon Frampton
Professor, Stem Cell Biology, Director Research Knowledge Transfer, University of Birmingham, United Kingdom
Studying the transcription factor c-Myb as a paradigm for understanding regulatory networks in blood stem cells and diseases of the hemapoietic system (10/10/10)

Professor Robert Williamson
Professorial Fellow, Pediatrics, Royal Children's Hospital, Melbourne
How to walk through the gap of death: from bright post-doc to established career scientist (10/10/10)

Professor Grant McArthur
Head, Translational Research Group; Head, Molecular Oncology Laboratory, Peter MacCallum Cancer Centre, Melbourne
Therapeutic targeting of oncogene addiction (14/10/10)

Dr Michael Rhodes
Senior Manager – Sequencing, Life Technologies
The answer is in the sequence(19/10/10)

Associate Professor Sam El-Osta
Head, Human Epigenetics, Baker IDI Heart and Diabetes Institute
Development of diabetic complications as a result of prior poor glycemic control are mediated by persistent activating epigenetic changes of methyl-writing and -erasing enzymes (21/10/10)

Associate Professor Carol Wicking
Group Leader, Molecular Genetics and Development, Institute for Molecular Biosciences, University of Queensland
The primary cilium in trafficking, development and disease (28/10/10)

Dr Geoff Dumsday
Senior Research Scientist, CSIRO Molecular and Health Technologies
CSIRO - Recombinant protein production facility (5/11/10)

Professor John Griffin
Department of Molecular and Experimental Medicine, the Scripps Research Institute, California, USA
Tangled web of host defence and the protein C pathways (10/11/10)

Professor Levon Khachigian
Director UNSW Centre for Vascular Research, University of New South Wales
Development of DNAzymes as novel "first-in-human" therapeutics (11/11/10)

Professor John Aitken
Director of ARC Centre of Excellence in Biotechnology and Development, University of Newcastle, New South Wales

Dr Daniel Gough
Postdoctoral Fellow, New York University School of Medicine, New York City, USA
Mitochondrial STA3 is essential for Ras-transformation (24/11/10)

Professor Susan Davis
Program Director, Women's Health, Department of Medicine, Monash University (Alfred Hospital)
Should women receive androgen replacement therapy, and if so, how? (25/11/10)

MIMR Postgraduate Committee

The MIMR Postgraduate Committee provides support and mentoring for over 100 higher degree students and their supervisors, with the aim of facilitating the progress of each student towards the successful completion of their degree.

The committee, made up of representatives from each research centre, as well as current postgraduate students, meets monthly to review student progress and deal with any issues arising within students' studies or other issues impacting more generally on postgraduate students.

The main task of the Postgraduate Committee is to coordinate the formal postgraduate reporting requirements. This includes confirmation of PhD candidature and the new milestones which came into effect in 2010, which now incorporate a mid-candidature review and pre thesis submission seminar.

Social events are also a focus of the committee. In 2010, the welcome barbeque, the inaugural Three Minute Thesis Competition and the Postgraduate Symposium for third and fourth-year students all created a nurturing, stimulating and fun environment.

In 2010, further resources were added to the postgraduate information section of the MIMR intranet. This was complemented by a postgraduate skills program with workshops such as PhD writing for international students; mental health awareness training; completing the new online progress reports; and applying for scholarships, awards and travel grants.

Community Education

MIMR is committed to encouraging secondary school students with a passion for medical research.

To nurture the scientists of tomorrow, the Postgraduate Committee coordinates a work experience program for students in years 10 to 12. In 2010, students from high schools across Victoria undertook work experience at MIMR. Students spent time in each of the Institute's research centres and technical facilities, and were provided with a valuable insight into the medical researcher's world.

Scientists from the Institute also contributed to the national Science in Schools' program.

Education Events

Student Open Day

The annual Student Open provides undergraduate students with the opportunity to see first-hand the diverse range of research projects on offer at MIMR.

Eight-four students attended the 2010 Open Day, which was held jointly with Prince Henry's Institute. Evaluation surveys handed out at the conclusion of the Open Day showed that the student-led tours were popular, and MIMR 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, lab facilities and the research undertaken as their main areas of interest.

Three Minute Thesis Competition

The inaugural Three Minute Thesis Competition challenged PhD students to condense their research projects into succinct, interesting presentations.

Topics ranged from saving endangered animals, to improving livestock production, finding new therapeutic targets for cancer and improving the care of premature babies and young children.

The winners were:

First prize: Melissa Siew

Second prize: Rob Galinsky

Third prize: Alana Westover

As the winner, Melissa then represented MIMR at the Faculty-wide three minute thesis contest, where she came second overall.

Student Symposium

The annual Student Symposium provides third and fourth-year PhD students with an invaluable opportunity to present their research to their peers and the Institute's senior researchers. Sponsored by Life Technologies, the 2010 Symposium showed the future of medical research is very bright indeed.

The winners were:

Third year Student Awards

First prize; Dr Ryan Hodges

Second prize:
Pinglu (Louie) Ye

Third prize: Alana Westover

Fourth Year Student Awards

First prize: Annie McDougall

Second prize:
Ana Baburamani

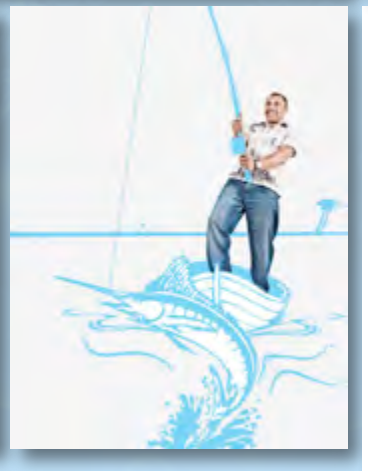
Third prize: Ka Yee Fung

Team Player Awards

Matthew Thompson and Alex Wilding

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.



In 2010, Andrology Australia celebrated a decade of achievements in men's health education and research. Over the past 10 years, the program has been an advocate for the improvement of men's health and contributed to the evidence-base that underpins the Australian Government's first National Male Health Policy, which was released in May 2010.

Andrology Australia continues to support individuals and health professionals with a range of innovative and evidence-based health promotion and education resources to raise awareness of male reproductive health issues. With many resources being made available online, the Andrology Australia website has become a popular portal of information. Website use increased by almost 10 per cent in 2010, recording an average 57,000 visits each month. More than 370,000 patient and professional resources were downloaded throughout the year – highlighting the importance of making evidence-based men's health information accessible online. Andrology Australia also took its first steps into the realm of social media (Twitter, Facebook and You Tube) to further awareness of the program and allow development of new health promotion opportunities.

A key highlight in 2010 was the Andrology Australia Forum – 'Tackling the Inequities in men's health' held in June. The forum provided an overview of the issues and possible solutions to the health disparities that exist between different groups of men in Australia; as identified in the National Male Health Policy.

The year also saw the completion of a male health education module for male Aboriginal Health Workers. The education module, developed with guidance from the Andrology Australia Aboriginal and Torres Strait Islander Male Health Reference Group and supported by the Rio Tinto Aboriginal Fund, will be evaluated in 2011 prior to national roll-out. Andrology Australia also developed a men's health education program for practice nurses that will be piloted in 2011.

In terms of community education, the program supported more than 1000 individuals and groups hosting events across Australia for International Men's Health Week in 2010 and this is expected to increase in 2011.

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

2010 Graduates

PhD

Maryam Asl
Centre for Reproduction and Development
Generation of embryonic stem cell lines from IVF embryos and parthenotes

Dr Tony Goldschlager
Ritchie Centre
The role of progenitor stem cells in promoting cervical interbody fusion

Sonya Hubbard
Centre for Women's Health Research
Cell surface markers for identifying endometrial cancer stem cells

Sirisha Mendis
Centre for Reproduction and Development
Activin and its role in the developing fetal testis

Burcu Saglam
Centre for Women's Health Research
The effects of sulfasalazine use on infection-mediated fetal brain injury

Scott Sands
Ritchie Centre
Mechanisms of periodic breathing and hypoxemia during apnea in the infant

Pollyanna Tat
Centre for Reproduction and Development
Factors affecting the reprogramming efficiency of somatic cells

BBioMedSci (Hons)

Andra Desra
Centre for Innate Immunity and Infectious Diseases
The mechanisms of cell entry and intracellular fate of Helicobacter pylori outer membrane vesicles

Kiranjeet Dhaliwal
Centre for Women's Health Research
Expression of follistatin variants 288 and 315 in mouse ovary and uterus throughout the estrous cycle

BBiotech (Hons)

Jing Tee
Centre for Reproduction and Development
Immune responses elicited by human amnion epithelial cells

BMedSc

Mohd Afandi
Ritchie Centre
Utilisation of human amnion epithelial cells in inflammation induced brain injury in pre-term infants

Hazwani Haji MD Noor
Ritchie Centre
Can maternal creatine supplementation prevent the effects of hypoxia-ischemia in utero?

Suzane Shiyun
Centre for Women's Health Research
Human amnion epithelial cells for lung repair following chronic lung injury

Sophia Tsiligiannis
Centre for Women's Health Research
Fibroid associated heavy menstrual bleeding

BMedSc (Hons)

Lauren Nisbet
Ritchie Centre
Are cardiovascular parameters in 3 to 5 year old children altered by sleep disordered breathing?

Brendan Payne
Centre for Cancer Research
Gli independent Hedgehog signalling downstream of smoothened

Pallavi Prathivardi
Ritchie Centre
The effects of dummy sucking on autonomic cardiovascular control and arousability during infant sleep: Implications for sudden infant death syndrome

BSc (Hons)

Deepashree Balehosur
Centre for Reproduction and Development
Induction and characterisation of pluripotent stem cells from sheep

Melinda Dolan
Ritchie Centre
The role of the glucocorticoid receptor in inflammation-mediated fetal lung maturation.

Kieren Marini
Centre for Cancer Research
PKR regulation of c-Jun

Megan McFarlane
Ritchie Centre
Treatment with melatonin decreases the molecular markers of oxidative stress in IUGR lambs

Trish Medved
Centre for Reproduction and Development
Identification of novel reprogramming factions in mammalian oocytes

Deevina Arasaratnam
Centre for Reproduction and Development
Generation of hepatocytes from placental stem cells

Paul Daniel
Centre for Reproduction and Development
Cell programming using oocyte factors

MBioMedSci

Fangyuan 'Wendy' Yang
Centre for Women's Health Research
Postnatal growth & development of the mouse epidiymis and the use of the label retaining cell approach to identify adult stem cells

MBioMedSci Part 1

Kanika Jain
Centre for Reproduction and Development
Differentiation of mouse embryonic stem cells to hepatic progenitor cells

VII Supporting our Reserach

Monash Health Translation Precinct Core Facilities

Chief Operating Officer Report

Human Resources

Occupational Health, Safety and the Environment

Logistics

Technology Services Group

Community and Philanthropic Support

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 Southern Health's 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. These facilities are managed by MIMR researchers and staff. Throughout 2010, there was an increase in patronage of all core facilities.

The Precinct's core facilities services comprise:

- Gandel Charitable Trust Sequencing Centre
- High Content Screening Facility
- A dedicated satellite Monash Microimaging Facility
- Flow Cytometry Facility
- Histology Facility
- The Monash Medical Centre Animal Facility

The Core Facilities Team - Back row: Vivien Vasic, Dr Trevor Wilson, Dale Cary
Front row: James Ngui, Camden Lo, Monika Generowicz

Prof Matt Gillespie, Director, Prince Henry's Institute; Ms Vivien Vasic, Manager, Gandel Charitable Trust Sequencing Centre; Mr John Gandel AO; Prof Bryan Williams

Gandel Charitable Trust Sequencing Centre

Manager: Vivien Vasic

It was a year of expanding services, upgrading equipment and developing new programs within the Gandel Charitable Trust Sequencing Centre. These combined changes resulted in improved services for the 500 medical researchers and clinicians based at the MHTP, as well as nationwide.

There were several funding highlights in 2010 that have enabled the purchase of new, state-of-the-art equipment.

The Gandel Charitable Trust continued their generous support, donating a further $75,000 for the purchase of a genetic microbial system using DNA sequencing. This new system will improve clinical diagnosis, treatment and care of patients by providing a rapid and accurate method of identifying bacteria and fungi causing disease and illness.

A $20,000 grant from the Rebecca L Cooper Medical Research Foundation facilitated the purchase of a second real-time PCR 7900HT instrument. This was purchased to meet the increased demands of the Centre's gene expression service.

ACRF Centre for Cancer Genomic Medicine

At the end of the year, $1.6 million in funding was received from the Australian Cancer Research Foundation (ACRF); one of only three such grants awarded in Australia. It will enable the MHTP to purchase next generation sequencing equipment and establish the ACRF Centre for Cancer Genomic Medicine (ACCGM) in 2011. The proven management structure for the Sequencing Centre helped influence the establishment of the ACCGM, and will be adopted for the Precinct's newest centre. The ACCGM will provide an invaluable service for cancer research and will accelerate the translation of research, diagnosis and treatment for cancer patients.

The ACCGM will be closely linked to the existing DNA sequencing services provided by the Gandel Charitable Trust Sequencing Centre. Both Centres will provide services to MHTP researchers and medical researchers throughout Australia.

Monash High Content Screening Facility

Manager:
Dr Trevor Wilson

High Content Screening is a combination of cell biology, fluorescence microscopy and automated analysis.

In 2010 the Monash High Content Screening Facility provided services to a variety of research projects within the MHTP and externally. More researchers accessed the Facility, and a greater number of quantitative assays were performed. These assays measured parameters such as drug resistance, programmed cell death, alterations in mitochondrial function, oxidative stress, changes in cell size and shape, and changes in level or subcellular localization of proteins.

While data from these assays have already made important contributions to ongoing research, some assays are being optimised for use in large-scale experiments. In these projects, the combination of robotics and automated analysis allows screening of gene knockdown libraries. These will identify novel genes involved in processes such as cancer chemoresistance and cellular respiration in response to pathogens. Results from these studies will allow future development of novel therapeutic strategies.

Micro Imaging

Imaging Research Fellow and Manager: Dr Camden Lo

The Monash Micro Imaging Facility at MIMR operates sophisticated imaging platforms and analysis for all scientists and staff based at the MHTP. The facility provides consultation, training, reagents and imaging technologies encompassing a variety of modalities, from timelapse molecular fluorescence imaging to sophisticated 4D reconstruction and multiphoton imaging techniques. The facility has also established itself as the technical demonstration site for Berthold scientific instruments, providing technical expertise and consultations on their deconvolution microscope systems.

In 2010, the facility expanded both in equipment and staff numbers. Instrument usage totalled more than 6000 hours, averaging 116 hours of use per week. Through a joint equipment grant between MIMR and the Department of Medicine (Southern Clinical School, Monash University), a live sample imaging deconvolution microscope was installed and commissioned on site. This enables researchers to investigate and observe disease and biological characteristics inside living cells in real time.

Collaborating closely with laboratories and researchers on site, the facility co-authored and published one paper with Dr Ashley Mansell's group in 2010, and is collaborating on a range of projects across the Precinct. The depth of expertise and the range of technology within the facility allows researchers to study the intricate events of healthy and diseased biological systems, from organs and tissues down to proteins and molecules within cells.

Flow Cytometry Facility

Manager: James Ngui

The Flow Cytometry Facility houses two high-end cell sorters, two cell analysers and an offline data analysis workstation. The facility aims to continue providing high quality research and clinical flow cytometry services to researchers and clinicians within the MHTP. A dedicated facility technician has been appointed to operate and maintain all instruments and to provide quality advice on experimental design and data analysis.

The number of clients continues to increase and this has resulted in a service capacity of over 80% for 2010. The facility also collaborates with external clients, and in 2010, introduced researchers from the Royal Women's Hospital and the Austin Hospital to the service.

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.

The facility's first full year under new management was a successful one that saw a large increase in the volume of throughput, largely due to new external clients using the service. The total number of slides produced by the facility increased in 2010 to 11,000 slides, close to double the 2009 total.

A complete redesign of the Histology Facility created a more open and user-friendly layout. This has contributed greatly to increased productivity, while changes to the facility website improved access to information about the services and equipment available.

Towards the end of 2010, the Histology Facility acquired a new high capacity automated tissue processor capable of handling up to 300 samples per run. This valuable piece of equipment will more than triple current output capabilities and allow us to improve services and reduce turnaround time even further in the future.

Monash Medical Centre Animal Facilities

Manager: Monika Generowicz

It was another busy and challenging year for the Monash Medical Centre Animal Facility, as staff made the adjustments required to become a part of the Monash Animal Research Platform. Joining forces in this way gave clients a wider range of products and services for their research.

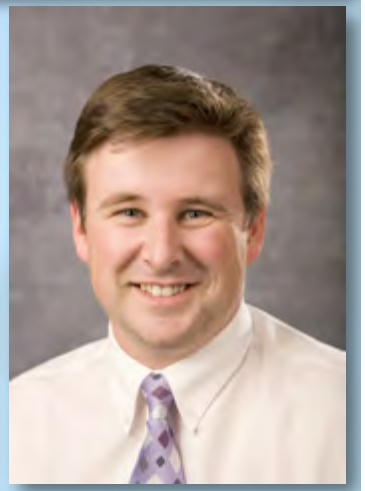
Within the facility, the SPF areas had a steady increase in mouse numbers as the vacant spaces on our new "second-hand" Tecniplast racks were filled. Numerous mouse lines were successfully embryo rederived into the High Barrier SPF, and staff juggled the changing needs of researchers in our conventional areas with the influx of new groups.

Significant changes were planned for the conventional areas at B Block within the Monash Medical Centre, which included the introduction of housing for spiny mice, segregation of rat and mouse areas to increase area functionality and the redevelopment of many of the laboratory areas to accommodate the increasing need for additional sheep housing and research.

Many staff changes also occurred in 2010. Jo Howden returned from maternity leave, and three staff members, Sally-Anne Mason, Nicolle Gibson and Shirine Chaudhry, left to embrace the challenges of motherhood. Kim Paulin left MMCAF to join the Australian Phenomics Network group. The thoughts of all MMCAF staff were with Carlie Tobias as she faced her own personal challenges after being involved in a serious car accident.

As 2011 approaches, MMCAF staff are looking forward to finalising the B Block redevelopment and continuing to improve our services to researchers.

Chief Operating Officer Report



The role of the Chief Operating Officer at MIMR is to oversee the finance; purchasing and logistics; public relations, marketing and fundraising; human resources; occupational health and safety; and general administration roles within the Institute. We are fortunate these teams are staffed by talented, hard working individuals who all provide vital support to our researchers. These functions have separate reports within this Annual Report.

Financially, it was another strong year for the Institute. Despite challenging financial circumstances, we still managed to increase our net revenue by ten percent. We did experience a small operating loss, which reflects the difficulty in meeting research targets and rising costs. But, it is a credit to our researchers that our competitive research funding increased by 18 percent, which was a remarkable effort.

The $1.6 million the Monash Health Translation Precinct was awarded by the Australian Cancer Research Foundation (ACRF) means we can now establish a next generation facility that will change the way cancer research is conducted on this site. Plans are underway to physically accommodate the new ACRF Centre for Cancer Genomic Medicine when it is launched in 2011.

We welcomed groups from Monash University's Department of Physiology and the Monash Immunology and Stem Cell Laboratories, who joined the Ritchie Centre in February. Professors Graham Jenkin, Stuart Hooper and David Walker have brought 79 staff and students with them. In their respective fields of regenerative medicine, lung development and neurodevelopment, they have added another layer of research to the Ritchie Centre. The addition of these teams has now created the largest perinatal and fetal research cluster in the Southern Hemisphere. Although, with our ongoing space issues, it has been a tight squeeze to accommodate such a large group, they have greatly enriched the Institute's research capacity and we are delighted to have them on board.

Throughout the year, a great deal of work was undertaken on the Remote Site Connection; a project designed to provide all personnel in the Monash Medical Centre with state-of-the-art IT access and support. Wireless technology with high-speed connectivity has been implemented throughout the whole site, and will be rolled out in 2011.

I would like to thank all administrative staff for their hard work throughout the year. I would also like to thank Professor Bryan Williams for his ongoing support and leadership.

Rod Wealands

Chief Operating Officer

Human Resources

HR Advisor:
Tegan McPherson

Human Resources within MIMR focuses on continuous improvement of HR services to attract, retain and support the talented and committed researchers, staff and students.

In March, the Institute's HR Advisor, Ms Tali Nassau, left MIMR and was replaced by Ms Tegan McPherson.

Throughout the year, a strong demand for staff administration continued, with more than 200 appointments and reappointments. This included the transfer of three key researchers and their groups to the Ritchie Centre and the recruitment of two new Senior Scientists and their teams to the Centre for Reproduction and Development. Conversely, the departure of the Centre for Women's Health Research staff was also managed.

Research Centres continued to attract an increased number of international appointments, visitors, honoraries and affiliations, which contributed to the constant strengthening of the Institute's innovative research environment.

In 2010, a new online recruitment and selection system, Recruitment Express, and online performance management system, Performance Development Online, were introduced. These rollouts have eased the researchers' administrative workload and provided a more efficient and effective HR service to all Institute employees. Electronic timesheets and automated renewal processes will be rolled out in 2011, in a bid to further improve services.

Occupational Health, Safety and the Environment

Manager:
Ganeema Tokhi

Occupational Health, Safety and Environment (OHSE) is an integral component of the Institute's research and management activities. The Institute aims to provide the highest standards in accordance with the OHS Act 2004 to protect staff, students, visitors and contractors.

OHSE data over the past five years has supported a culture of continuous improvements to minimise incidents and hazards in the workplace. This is reflected in the higher profile OHSE issues now have at a senior level. The positive performance indicators provide a clear picture of the achievements in sustained improvements over the recent years.

In 2010, the number of reported incidents and hazards continued to fall. The reduction in the reported hazards and incidents over the past two years can be attributed to employees pro-actively and promptly in dentifying potential issues before an incident can occur. This, in turn, can be partially attributed to the biannual workplace safety inspections carried out by the OHSE Manager.

The Institute has achieved compliance in new staff and student safety induction programs. To achieve 100% attendance in 2011, three weekly induction programs will be scheduled. Additionally in 2010, the Institute complied with the annual targeted number of two evacuation drills, four OHSE Committee meetings and two workplace inspections.

Logistics

Manager:
Rod Gillett

The Logistics team looks after the day-to-day running of the Institute and supports the needs of researchers and staff. Tasks undertaken include asset management, laboratory moves, coordinating incoming and outgoing goods, contracts, purchasing, mail and general maintenance throughout the Institute's three primary locations.

2010 was a busy year for the Logistics team. Purchasing requests increased by 15 percent and logistical moves by 35 percent. A key project during the year was the large research group that moved to MIMR from the University's Department of Physiology.

In addition, a new online stores system and inventory control was implemented. The system has allowed the team to streamline requests, better manage stock control, improve reporting on stock lines, and greater buying power.

Technology Services Group, Southern Regional

Service Delivery Manager:
Kristian Goree

The Technology Services Group (TSG), Southern Regional provides information technology services and support to staff and students based at MIMR, Prince Henry's Institute and Monash University Faculty of Medicine, Nursing and Health Sciences. In 2010, the group delivered technology services that not only supported the business, but introduced innovation and development to ensure the future needs of all users.

A major project for 2010 was the migration to the Google Apps suite of tools. This provides staff with a consolidated and collaborative environment for email, calendar, document sharing and video conferencing. Our team also bid farewell to our Manager, Michael Oldfield & Service Delivery Manager, Junaid Qamar, both leaving after many years of service. We wish them both all the best in their future endeavours.

Community and Philanthropic Support

Fundraising and philanthropy play a vital role at MIMR, enabling the Institute to pioneer innovative research projects, purchase essential equipment and support the careers of students and researchers alike. We would like to extend our sincere thanks to all the individuals, philanthropic trusts and foundations, corporate donors and sponsors who help MIMR achieve its vision and maintain its position as one of Australia's leading medical research institutes.

Patrons Club

Patrons of MIMR pledge an annual gift of $1,000 which provides valuable funding for the Institute. Our annual Patrons event this year took place in July and provided Patrons with the opportunity to learn more about the exciting research taking place in the Centre for Cancer Research. Professors Bryan Williams and Neil Watkins spoke about their research which could lead to new therapies for patients with lung cancer and those suffering from recurring cancer after a period of remission. The evening offered the opportunity for Patrons to learn more about the Institute and to meet fellow members.

Communicating to the public

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 firsthand about our latest research developments. In 2010, guests from various Probus and Rotary Clubs, as well as Rylands of Hawthorn Residential Community learnt about stem cells, prostate cancer and pelvic organ prolapse.

The Institute is proud of its researchers involved in the CSIRO's Science in Schools program; a program designed to promote science education in primary and secondary schools. Throughout 2010, Drs Maria Liaskos, Ashley Mansell, Tim Moss and Elizabeth Williams all volunteered their time and inspired students to consider a career in medical research.

In September, MIMR researchers gave up their weekend to become 'Inspiring Scientists' at Scienceworks' annual National Science Week event. Over two days, MIMR students, postdoctoral researchers and senior research fellows encouraged hundreds of children to develop an early love of science and scientific research. Based on the theme 'germs', children had the opportunity to examine bacteria under a microscope, learn about different bacteria from the paws of dogs and cats, and could even took home their own science experiment, after learning about which type of hand wash provided the best germ-free environment.

2010 Ron Evans Golf Day

The annual Ron Evans Golf Day honours businessman and sportsman, Ron Evans AM, and raises money for the Institute's bowel cancer research program.

Twenty-nine teams battled it out for the perpetual Ron Evans Perpetual Trophy, at the Royal Melbourne Golf Course. This year, David Evans' team was victorious. Escaping the early summer heat, players later enjoyed dinner, and showed their enthusiasm for the 'live' and silent auctions.

The 2010 Ron Evans Golf Day raised in excess of $190,000, including a generous $50,000 gift from Mrs Andrea Evans. Funds raised will further boost MIMR's bowel cancer research and support the Ron Evans Cancer Research Fellow and the Ron Evans Cancer Research Scholar.

The commitment and generosity of the Evans Family continues to support MIMR scientists in searching for answers to the third most common cancer in Australian men and women.

2010 Supporters

We would like to acknowledge the support of the following organisations and individuals during 2010

Federal Government

- Australian Research Council (ARC)
- National Health & Medical Research Council (NHMRC)
- Research Infrastructure Support Services (RISS)

Victorian State Government

- Operational Infrastructure Support Program
- Victorian Cancer Agency

Golf Day Supporters

- 3 Point Motors
- AFL
- Mrs Deanna Atkins
- Balencea Bar & Restaurant
- Balnaves of Coonawarra
- Brisbane Lions
- Cancer Council
- Carlton Football Club
- Channel Nine
- Channel Seven
- Collingwood Football Club
- Complete Personal Styling
- Cricket Australia
- Danihers
- Designwyse
- Drummond Foundation
- Elite Sporting Tours
- Essendon Football Club
- Etihad Stadium
- Evans and Partners
- Mrs Andrea Evans
- Mr & Mrs David & Sonya Evans
- Fox Sports
- Mr & Mrs Ken & Shirley Fraser
- Friends of Mine Café
- Goldman Sachs JBWere
- Halo Hair
- Hardwicks Kyneton
- Healthscope
- Hemden Shirt Makers
- Heymanson Family Foundation
- Hollick Coonwarra
- IMG
- Immerse Yarra Valley
- KPMG
- Mr Peter Kritikides
- Krongold Group of Companies
- Mr Rod Law
- Linfox
- Melbourne Football Club
- Melbourne Vixens
- Mercedes Benz – Melbourne
- Micro Beer Club
- Mint Gifts on Cotham
- Mt Schanck Estate
- National Australia Bank
- Mr Cameron Price
- Ms Dagmar O'Brien
- Ocha Japanese Restaurant
- Silverwater Resort
- Slattery Media Group
- Spotless Group Ltd
- Ted's Cameras
- The Barn – Mount Gambier
- The Brown Family
- The Flinders Golf Club
- The House of Golf
- The Royal Melbourne Golf Club
- Mr Shane Warne
- Mr Craig Willis
- Mr Peter Wilson

Patrons Club Members

- Mr Ian Allen OAM
- Mr John Baldwin
- Mr Rex Beaconsfield
- Mr Andrew Blode
- Mr Andrew Buxton
- Ms Robin Campbell
- Mr Graham Cowin
- Mr Clyde Davenport
- Emeritus Professor David de Kretser AC
- Mr Ian Dicker AM
- Mr Michael Drapac
- Mr Les Erdi OAM
- Dr Alan Finkel AM
- Mr Barry Fradkin OAM
- Mr Paul Gargett
- Mrs Greta Grossberg
- Mr Dean Harris
- Ms Lanie Harris
- Mr Anthony Heffernan
- Mr Craig Kimberley
- Mr David Koadlow
- Mr Ron Krongold (Dec)
- Mr Michael Naphtali
- Dr Chris Pappas
- Mr George Pappas
- Mr Bruce Parncutt
- Mr Tony Rogers
- Mr David Smorgon OAM
- Mr Jack Smorgon AO
- Mr Michael Smorgon
- Mr Norman Smorgon
- Mr Robert Smorgon AM
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- Mr Tony Smorgon
- Mr Michael Sput
- Mr Rob Thomas
- Professor Adrian Walker
- Professor Bryan Williams
- Mr Dennis Wilson
- Mr Ross Wilson
- Mr Graeme Wise

Philanthropic Supporters and Sponsors

- American Asthma Foundation
- ANZ Trustees - The Arthur & Mary Osborn Charitable Trust
- ANZ Trustees - James & Vera Lawson Trust
- Arthritis Research UK
- Association of International Cancer Research
- Australian Cancer Research Foundation
- Australian Cystic Fibrosis Research Trust
- Australian Microscopy and Microanalysis Research Facility
- Australian Rotary Health Research Fund
- Australian Stem Cell Centre
- Australian Synchrotron Company Ltd
- Ballarat Combined Charities Card Shop
- Baxter Healthcare Corporation
- Bendigo Combined Charities Card Shop
- Bill & Melinda Gates Foundation
- Camberwell Charity Christmas Card Shop
- CASS Foundation
- Cerebral Palsy Research Foundation
- Consulting International Partnerships (JE & HTE Maloney Scholarship)
- Country Women's Association – Donvale
- Equity Trustees – Walter Cottman Endowment Fund
- European Respiratory Society
- European Society of Clinical Microbiology & Infectious Diseases
- Foundation for the Study of Infant Death UK
- H & K Johnston Family Foundation
- Harold Mitchell Foundation
- Heart Foundation
- Helen Macpherson Smith Trust
- Ian Potter Foundation
- International Society for Interferon & Cytokine Research
- Jack & Robert Smorgon Families Foundation
- Jack Brockhoff Foundation
- James S. McDonnell Foundation
- Jean Hailes Foundation
- John T Reid Charitable Trusts
- Life Technologies
- Lions Club of Karingal Inc
- Marian & EH Flack Trust
- Matsarol Foundation Pty Ltd
- Monash/Waverley Community Information and Support
- National Breast Cancer Foundation
- National Institute of Neurological Disorders and Stroke
- Organon Australia
- P & M Harbig (Holdings) Pty Ltd
- Prostate Cancer Foundation of Australia
- Pfizer Oncology Research Unit Scholarship
- RANZCOG Research Foundation
- Rebecca L Cooper Medical Research Foundation
- Rotary Club of Balwyn Inc
- SIDS and Kids
- Stem Cell Technologies
- Sylvia & Charles Viertel Charitable Foundation
- The BUPA Foundation
- The Cancer Council Victoria
- The Financial Markets Foundation for Children
- The Gandel Charitable Trust
- The Marian & EH Flack Trust
- The Pratt Foundation
- The Scottish Cot Death Trust
- Thoracic Society of Australia & New Zealand
- Twynam Agricultural Group
- W.I. McNab Special Fund
- Wilrene Pty Ltd

Individual Donors $200+

- Mr Noel Allanson
- Dr John Campbell
- Mr Ian Cathie
- Mr Douglas & Mrs Margaret Chandler
- Mr Arthur & Mrs Ethel Cocks
- Ms Marlis Cohen
- Ms Janet Duncan
- Mr Peter Edwards
- Ms Miriam Faine
- Mr Peter Foster
- Mr Graeme Fraser
- Mr Brian Gallery
- Mr Rodney Hill
- Mr Harry Levi
- Mr Robert Liddle
- Mr Otto Lobert
- Mr Kevin Luscombe AM
- Mr Eric Margetts
- Mr Ross & Mrs Margaret McCann
- Mr Moshe Meydan
- Mrs Veronica Mulquiney
- Ms Elizabeth O'Keefe
- Mr Ian Parsons
- Mr Anthony Pyman
- Mr Alan J Reiter
- Mr Ralph & Mrs Ruth Renard
- Mrs Jill Ross-Perrier
- Mr Greg Shalit
- Mrs Janette Smith
- Mrs V Smith
- Emeritus Professor Ronald Taft
- Mrs Jean Thomas
- Ms Wendy Thomas
- Mr Don Upfill
- Mrs Baiba Warhaft
- Mr Geoff Webb
- Mrs Heather Whee
- Ms Denise Young

Memorial Gifts

- Mr Peter Mulquiney

VIII Publications

Centre for Cancer Research

Centre for Innate Immunity and Infectious Diseases

Centre for Reproduction and Development

Ritchie Centre

Centre for Women's Health Research

Monash Institute of Medical Research

Publications

Centre for Cancer Research

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Centre for Innate Immunity and Infectious Diseases

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Centre for Women's Health Research

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Monash Institute of Medical Research

(Non-Centre specific bi-lines for MIMR)

Journal Articles

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IX Financial Report

Cash Flow Statement

Cash Flow Statement

Year to date 31 December 2010

		2010
Income	General Revenue*	5,651,878
	Other Income	32,100
	Commercial Services Income	1,544,690
	Other Fees	0
	Student Course Fees	0
	Investment Income	100,542
	Non Research Funding	1,175,092
	Scholarships & Prizes	30,894
	Research Income	14,975,834
		23,511,030
Salaries Expenditure	All Salary Expenses	15,841,301
		15,841,301
Non Salary Expenses	Other Expenses	518,166
	Financial & Admin Services	622,024
	Travel & Related	826,464
	Book & Library	58,219
	Print & Stationary	241,291
	Computer Related	353,621
	Communications	414,296
	Equipment Related	181,131
	Lab & Operating	3,509,852
	Student Related	560,700
	Motor Vehicle	28,813
	Building & Property	186,358
		7,500,935
Capital Expenditure	Capital Expenditure	505,646
		505,646
Operating Surplus/Deficit**		-336,852

* Includes Victorian Government Operational Infrastructure Support Funding

** This deficit is due to significant carried forward funds which have offset this small operating loss.

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